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The Department of Commerce

PANAMA-PACIFIC
INTERNATIONAL
EXPOSITION EDITION

1915



ORGANIZATION OF DEPARTMENT, 1915



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Hon. WILLIAM COX REDFIELD, of New York

Assistant Secretary of Commerce

Hon. EDWIN F. SWEET, of Michigan

Office of the Solicitor

Solicitor ALBERT LEE THURMAN, of Ohio
Assistant Solicitor EDWARD T. QUIGLEY

Office of the Secretary

Chief Clerk and Superintendent GEO. C. HAVENNER
Disbursing Clerk GEORGE JOHANNES
Private Secretary to the Secretary U. GRANT SMITH
Private Secretary to the Assistant Secretary ROBERT H. CLANCY
Confidential Clerk to the Secretary AGATHE OLSEN
Chief Division of Appointments GEORGE W. LEADLEY
Chief Division of Publications DAN C. VAUGHAN
Chief Division of Supplies FRANCIS M. SHORE

Bureau of the Census

Director WILLIAM J. HARRIS

Bureau of Foreign and Domestic Commerce

Chief EDWARD EWING PRATT
Assistant Chief (first) EDWARD A. BRAND
Assistant Chief (second) FRANK R. RUTTER

Bureau of Standards

Director S. W. STRATTON

Bureau of Fisheries

Commissioner HUGH M. SMITH
Deputy Commissioner E. LESTER JONES

Bureau of Lighthouses

Commissioner GEORGE R. PUTNAM
Deputy Commissioner JOHN S. CONWAY

Coast and Geodetic Survey

Superintendent OTTO H. TITTMANN
Assistant Superintendent FRANK WALLEY PERKINS

Bureau of Navigation

Commissioner EUGENE TYLER CHAMBERLAIN
Deputy Commissioner ARTHUR J. TYRER

Steamboat-Inspection Service

Supervising Inspector General GEORGE UHLER

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THE DEPARTMENT OF COMMERCE.



ORIGIN AND ORGANIZATION OF THE DEPARTMENT.

ORIGIN.

The preamble to the Constitution lays down broadly two great aims of government—(1) the defense of the life, liberty, and property of the citizen, and (2) the promotion of his general welfare.

In the year following the adoption of the Constitution, three of the executive branches of Government, with Secretaries, were established: First, the Department of Foreign Affairs, by act approved July 27, 1789 (name changed to Department of State by act approved September 15 of the same year); second, the War Department, created by the act of August 7, 1789 (then embracing naval affairs); and third, the Treasury Department, established by act of September 2, 1789. Until the Department of Commerce (and Labor) was organized, in 1903, the Treasury Department was the principal agency of government through which a limited supervision of the commercial and industrial life of the nation was administered, and the designation sought to be given its chief officer in the constitutional convention was that of "Secretary of Commerce and Finance."¹

The record of events from the close of the Revolution to the constitutional convention at Philadelphia in 1787 shows that the desire to foster the commerce and trade of the States was the paramount and controlling argument which made the Union possible.

The constitutional convention of the thirteen States was the direct outcome of the Annapolis convention of five States, and this convention, in turn, was born of the Mount Vernon convention of delegates from the States of Virginia and Maryland, assembled to adjust and promote commerce and trade between those two States. The commissioners from Virginia and Maryland met at Alexandria,

¹ Documentary History of the Constitution.

in the former State, in the spring of 1785, but General Washington extended to them the hospitality of his home, which they accepted, and the delegates—all prominent men of their day, and friends of Washington—conducted their deliberations at Mount Vernon, aided, no doubt, by the counsel of their host, whose interest in and knowledge of the subject under discussion had long been manifest; and who, two years later, presided at the constitutional convention at Philadelphia. The sole subject of this meeting at the home of Washington was the commerce and trade between the two States; but in reality these men were enacting the prologue to what was to be in fact an indissoluble Union.

The Mount Vernon convention recommended that representatives be appointed annually to confer on the commercial and trade relations of the States. In considering this report, Maryland passed a resolution inviting Pennsylvania and Delaware to join in these annual conventions; while in the Virginia assembly, Madison penned a resolution appointing commissioners to meet such as should be delegated by *the other States* "to take into consideration the trade of the United States," and "to consider how far a uniform system in their commercial regulations may be necessary to their common interest and permanent harmony."¹

The immediate result of the conference on trade and commerce held at Mount Vernon was that in the following year, 1786, commissioners from five of the thirteen States assembled by appointment at Annapolis "to take into consideration the trade and commerce of the United States." In this convention, Hamilton drew up an address, which Madison and Randolph signed with him, recommending a general meeting of the States in a future convention, and an extension of the powers of their delegates to other objects than those of commerce, as in the course of their reflections on the subject they had been "induced to think that the power to regulate Trade is of such comprehensive extent and will enter so far into the General System of the Foederal Government, that to give it efficacy, and to obviate questions and doubts concerning its precise nature and limits, may require a correspondent adjustment of other Parts of the Foederal System."²

In the constitutional convention, August 20, 1787, Mr. Gouverneur Morris, seconded by Mr. Pinckney, submitted a proposal that

¹ Pennsylvania Magazine of History and Biography.

² Documentary History of the Constitution.

there should be a council of state to "assist the President in conducting the public affairs," the third member of this council to be a "Secretary of Commerce and Finance," whose duties were, in part, to "recommend such things as may in his judgment promote the commercial interests of the United States." This plan also provided for a Secretary of Domestic Affairs to have supervision of agriculture, manufactures, roads, and navigation.¹ The Constitution, as adopted, makes no provision for a cabinet or council of state, but President Washington immediately invited the Secretaries of the three departments first mentioned, and the Attorney General, appointed under the act of September 24, 1789, to become members of his official family. The Department of Justice was established by the act approved June 22, 1870.

During the period between the close of the Federal convention and the ratification of the Constitution, Alexander Hamilton, writing on the subject of commerce, said:

The importance of the Union, in a commercial light, is one of those points about which there is least room to entertain a difference of opinion, and which has, in fact, commanded the most general assent of men who have any acquaintance with the subject. This applies as well to our intercourse with foreign countries as with each other.²

In 1788, the same year in which the above was written by Hamilton, Commodore John Paul Jones, in a letter to the Marquise de Lafayette concerning the Constitution, stated:

Had I the power I would create at least seven ministries in the primary organization of government under the Constitution. In addition to the four already agreed upon, I would ordain a Ministry of Marine, a Ministry of Home Affairs, and a General Post Office; and, as commerce must be our great reliance, it would not be amiss to create also as the eighth a Ministry of Commerce.³

The remarkable foresight of the great commodore enabled him to name the Cabinet very much as it is to-day, practically in the order in which it grew, agriculture being included by him in the Interior (Home) Department, where it actually was for a time. The labor interests, however, are now also provided for in a separate department.

When the Constitution had been ratified by eleven States, and the Congress, under its authority to "regulate commerce with

¹ Documentary History of the Constitution.

² *Federalist*.

³ Original manuscript in archives of Congressional Library.

foreign nations and among the several States," proceeded solemnly to treat the commerce and manufactures of the two remaining States in the same manner as those of any foreign country, it was from a sense of their commercial interests that they hastened to enroll themselves with their sister Commonwealths, although one of these two States had not even participated in the convention.

Thus, not only were the commercial and industrial interests of the States an important and controlling influence in bringing them into the Federal convention, but a realization of the commercial advantages of the Union induced the States to ratify the Constitution.

In his first annual address to Congress, President Washington said:

The advancement of agriculture, commerce, and manufactures by all proper means will not, I trust, need recommendation.

The first Secretary of the Treasury, Alexander Hamilton, gave special consideration to the commerce and industries of the country, and his special reports on these subjects, in which he recommended that a board be established for promoting arts, agriculture, manufactures, and commerce, demonstrate that he considered this function of the Treasury Department one of primary importance.

Hastened by impending war with France, the act of April 30, 1798, was passed, establishing the Navy Department, and its Secretary became the fifth member of the Cabinet. In 1829 the Postmaster General entered the Cabinet for the first time, on the invitation of President Jackson, though this office had been in existence since the act of September 22, 1789. The General Post Office was constituted the Post Office Department by the act approved June 8, 1872.

The discussions in the early Congresses looking toward the establishment of another executive department centered around what was termed a "Home Department," and the then important work of government in connection with land and Indian affairs formed the nucleus from which was established, under the act of March 3, 1849, the Department of the Interior, whose Secretary became the seventh Cabinet member. As the business interests of the country entered largely into the provisions of the various measures anticipating the Interior Department, it may be well to notice some of these reports.

In a bill to establish a Home Department, introduced by Representative Vining, of Delaware, in the First Congress, July 23, 1789, the duties of the proposed department were, in part, "to report to the President plans for the protection and improvement of manufactures, agriculture, and commerce." The outcome of this movement was the change in name of Department of Foreign Affairs to Department of State, above noted, and the giving of duties to the State Department not comfortable with the original name.

President Madison's message of December 3, 1816, recommended the establishment of "an additional department in the executive branch of the Government"; and the Senate committee to which this recommendation was referred reported a bill to establish a Home Department to have charge of such subjects as the President might direct. In 1825 the subject was again revived, and Representative Newton offered a resolution that a department to be denominated "the Home Department should be established for the purpose of superintending whatever may relate to the interests of agriculture and manufactures, the promotion of the progress of science and the arts, the intercourse and trade between the several States by roads and canals." This resolution was not agreed to.

In his message of December 6, 1825, President John Quincy Adams recommended a reorganization of the executive departments, and the committee of the House of Representatives to which this matter was referred, by its chairman, Daniel Webster, reported a bill to establish a new department. The report stated that "at the organization of the Government it appears to have been the original design, in regard to the executive departments, that there should be a distinct and separate department for such internal or domestic affairs as appertain to the General Government."

On December 15, 1836, the resolution of Mr. Benton, of Missouri, that "the annual statement of the commerce and navigation of the United States be hereafter printed under the direction of the Secretary of the Treasury, and be communicated in printed form as soon as possible after the commencing of each stated session of Congress," was adopted by the Senate.

Notwithstanding the discussions leading up to the establishment of the Department of the Interior, very few of the commercial and industrial agencies of Government were put under the control of that department, most of them remaining under the jurisdiction of the Secretary of the Treasury.

The movement for the creation of an additional executive department, following the establishment of the Interior Department, took many and varied phases. The names proposed in the different bills to establish a new department indicate their provisions. These names included the following titles, grouped together in various ways: Agriculture, Commerce, Labor, Industries, Manufactures, Patents, Mining, Navigation, Transportation, and Mechanics.

The first industries of the country to be accorded an executive department by the Congress were those of agriculture, when the Department of Agriculture, established by act of May 15, 1862, was constituted an executive department, with a Secretary of Agriculture (eighth member of the Cabinet), by the act of February 9, 1889. The commercial and manufacturing interests of the country, as far as governmental supervision and cooperation were concerned, were left to offices distributed among the several departments. The business of government increased in volume as the country grew in age, and during the last half of the nineteenth century the work of the fiscal branch of the Treasury so absorbed the attention of the head of that department that his supervision of commercial matters had lost the importance it had enjoyed under the first Secretary of the Treasury.

Commercial conventions at Detroit in 1865, and at Boston in 1868, and the National Board of Trade in 1874, memorialized the Congress for the establishment of a Department of Commerce, in order that the rapidly increasing volume of capital invested in commerce and manufactures might be the subject of governmental aid and supervision. Many similar petitions were later presented to the Congress, and the subject was referred to in several political platforms and annual messages of the President. These petitions, and the representatives of commercial organizations before the committees of Congress, stated that the United States was a distinctly commercial and industrial nation; that the Twelfth Census showed the aggregate value of the products of the manufacturing establishments of the United States, during the census year ended June 1, 1900, to exceed thirteen billion dollars, which is probably nearly four times the aggregate value of all the products of agriculture during the same year; that the same arguments advanced for the creation of the Department of Agriculture were applicable to one for the commercial and industrial life of the country; that the

manufacturing interests in the United States exceeded in volume and importance the industrial interests of any nation in the world, and yet there was no Government office specially charged with any duties relating directly to them, and that in this respect the United States was almost alone among the nations of the world; that agriculture, labor, transportation, mining, fisheries, and forestry all had distinct recognition in one form or another, but not so with the manufacturing interests.

The country's need for a Department of Commerce, which had become national in scope in 1874, was forced to give way temporarily in order that all the energy of the commerce committees of Congress might be centered upon the eradication of the transportation evil of rebates. This resulted in the establishment of the Interstate Commerce Commission in 1887.

The movement for the establishment of the Department gathered headway, however, and in the Fifty-seventh Congress legislation providing for its organization was enacted. The legislative history of the act creating the Department appears in the Congressional Record for that Congress, and, while interesting, is too extended for more than the briefest outline here.

On December 4, 1901, Senator Nelson introduced in the Senate a bill (S. 569) "To establish the Department of Commerce," which was read twice and referred to the Committee on Commerce; on January 9, 1902, the bill was reported with certain amendments (S. Rept. No. 82, 57th Cong., 1st sess.). The discussion on the bill began in the Senate on January 13, was continued on January 16, 20, 22, 23, 27, and 28, and the bill passed the Senate with a number of amendments, including one changing the name to "Department of Commerce and Labor," on the last-named date.

The act was received in the House and referred to the Committee on Interstate and Foreign Commerce on January 30, 1902. On January 6, 1903, the committee submitted a report (H. Rept. No. 2970, 57th Cong., 2d sess.) recommending that the bill of the Senate (S. 569) be amended by striking out all after the enacting clause and substituting in lieu thereof an entirely new bill. The House bill, however, embraced most of the features contained in the Senate bill, the main contention being as to what bureaus should be embraced in the new Department.

On January 15, 1903, the bill was taken up under a special continuing order to be considered until finally disposed of in

Committee of the Whole House on the state of the Union. On January 17 the debate was concluded in the House and the bill was passed.

The bill was in due course sent to a committee of conference. (For Senate proceedings see Congressional Record of January 19 and 29, and February 10 and 11, 1903, and for House proceedings see Record of January 29 and February 9 and 10, 1903.) The conference report was agreed to in the House on February 10 and in the Senate on February 11, and the bill was signed by the President on February 14, 1903.

Thus the Secretary of Commerce and Labor became the ninth member of the President's Cabinet.

The labor interests first received recognition in the establishment of the Bureau of Labor under the act of Congress approved June 27, 1884; this Bureau was constituted the Department of Labor, and the Commissioner of Labor was continued in charge, by the act of Congress approved June 13, 1888. By the act of February 14, 1903, the Department of Labor was on July 1, 1903, transferred to the Department of Commerce and Labor, and made a bureau thereof. By the act of March 4, 1913, the name of the Bureau was changed to "Bureau of Labor Statistics," and by the same act it was transferred to and made a part of the new Department of Labor, the head of which became the tenth member of the President's Cabinet. The act of March 4, 1913, transferred also from the Department of Commerce and Labor to the Department of Labor the Commissioner General of Immigration, the commissioners of immigration, the Bureau of Immigration and Naturalization, the Division of Information, the Division of Naturalization, the Immigration Service at Large, and the Children's Bureau. Also the Division of Naturalization was created an independent bureau, and the title of the head thereof was changed from Chief, Division of Naturalization, to "Commissioner of Naturalization." The act of March 4, 1913, also changed the designation of the Department of Commerce and Labor to "Department of Commerce," and the title of the Secretary was changed to "Secretary of Commerce."

It may appear strange that one hundred and fourteen years elapsed before a Department of Commerce became a reality, when its need was felt and its value recognized at the very beginning. The answer is ready. Conservative action on the important subject of increasing the number of executive departments has been the

rule of the Congress. The name "Department of Foreign Affairs" was changed to "Department of State" in order that the field of that department might be enlarged and the creation of a home department avoided; the naval affairs were consolidated with those of the Army to make unnecessary a separate Department of the Navy. In this grouping in one department of matters that would logically form two, it was but natural that commerce and finance should at first abide together. The tendency of the national legislature to follow and not lead in enlarging the executive side of government compelled the Department of Commerce to wait, as each of the older departments in its turn had waited, until the demand for the legislation became paramount and unanimous, and until the field of its activity was already so large and the appeal so urgent that none but an affirmative answer could be given.

ORGANIZATION.

The initial step in the organization of the Department was the appointment, by the President, of George B. Cortelyou as the first Secretary on February 16, 1903; the nomination was confirmed by the Senate on the same day, and the Secretary, after taking the oath of office on February 18, established temporary headquarters at the White House.

The temporary headquarters were later moved to the building known as the Builders' Exchange, at 719-721 Thirteenth Street NW., where, in a large room divided by partitions, the work of organization was begun on March 16, 1903, though a Commissioner of Corporations, Chief Clerk, and Disbursing Clerk had been appointed prior to that date. A few weeks later the Willard Building, which was then under construction at 513-515 Fourteenth Street NW., was rented by the Department, and the Secretary, with as much of his force as was organized, moved in as soon as the building was completed. This building was the headquarters of the Department until September 1, 1913, though such of its bureaus as it had been impracticable to accommodate there were located about the city wherever suitable quarters could be found. The Department now, however, occupies a building which was designed especially for its needs at Nineteenth Street and Pennsylvania Avenue NW., where it will probably be located until its proposed new building is erected by the Government on the site which has already been acquired south of Pennsylvania Avenue between Fourteenth and

Fifteenth Streets NW. In addition to the offices of the Secretary, the following bureaus of the Department, which are the only ones occupying rented quarters, are housed in the Commerce Building: Bureau of the Census, Bureau of Foreign and Domestic Commerce, Bureau of Lighthouses, Bureau of Navigation, and the Steamboat-Inspection Service. The three remaining bureaus of the Department (the Bureau of Standards, at Pierce Mill Road; the Bureau of Fisheries, at the corner of Sixth and B Streets SW.; and the Coast and Geodetic Survey, at New Jersey Avenue near B Street SE.) occupy government owned buildings.

On the morning of June 17, 1903, under the auspices of the Grand Army of the Republic, the Nation's flag was raised for the first time over the new Department, and its headquarters was formally placed in commission. The entire personnel of the Department assembled at the flagstaff on the roof with a committee of the Grand Army of the Republic to witness the ceremony. Brief addresses were made by Judge I. G. Kimball, department commander, Grand Army of the Republic, and Secretary Cortelyou.

The law creating the Department transferred to it on July 1, 1903, certain departments and bureaus which had theretofore been independent offices or under the older executive departments, and this important date in the life of the new Department was marked by the assembling in the office of the Secretary of its general officers and a number of distinguished guests. The speakers on this occasion were Rev. Franklin Noble; Rev. D. J. Stafford; Secretary Moody, of the Navy Department; S. N. D. North, Director of the Census; and H. B. F. Macfarland, Commissioner of the District of Columbia.

Secretary Cortelyou made an address in which he recounted the work of preliminary organization, and spoke of the great opportunities before the Department in aiding and guiding the commerce and industries of the country and of the principles upon which the Department would administer the laws defining its powers. In closing, he said:

No other department has a wider field, if the just expectations of the framers of the legislation are realized. None will have closer relations with the people or greater opportunities for effective work. While we can not dedicate a new and imposing structure to the uses of the Department, we can at least, and I am sure we all do, dedicate ourselves to the work which Chief Executives have recommended and Congress in its wisdom has set apart to be done.

In this spirit I have thought it altogether fitting and proper that we should have these brief exercises, and that in them we should emphasize the fact that if we are to have the highest success as a nation in our commercial and industrial relations, whether among ourselves or with other peoples, we must keep ever to the front and dominant always those sturdy elements of character and the dependence upon Divine guidance which were so signally shown by the founders of the Republic, and to which we can not too often revert in these busy and prosperous times which make memorable for us the opening years of the new century.

The Department of Commerce, as at present constituted, in addition to the offices and divisions in the immediate Office of the Secretary, consists of the Bureau of the Census, the Coast and Geodetic Survey, the Bureau of Fisheries (to which the administration of laws and regulations governing Alaskan fur-seal and salmon fisheries and fur-bearing animals has been assigned), the Bureau of Foreign and Domestic Commerce (which has among its duties the direction of the work of commercial attachés at foreign capitals and of commercial agents at home and abroad), the Bureau of Lighthouses and the Lighthouse Service, the Bureau of Navigation (under which are the Shipping and Radio Services), the Bureau of Standards, and the Steamboat-Inspection Service.

Most of these bureaus and services were transferred to the Department on July 1, 1903, by the act of February 14, 1903, known as the organic act. The Coast and Geodetic Survey, the Bureaus of Lighthouses (formerly the Lighthouse Board), Navigation, and Standards, and the Steamboat-Inspection Service were previously under the Treasury Department and the Bureau of the Census was in the Interior Department, while prior to July 1, 1903, the Bureau of Fisheries was an independent office (not assigned to any department). The Alaskan fur-seal fisheries also were formerly in the Treasury Department.

The Bureau of Foreign and Domestic Commerce is a consolidation (effected by the legislative, executive, and judicial appropriation act of August 23, 1912) of the former Bureaus of Manufactures and Statistics, the first of which was created by the act of February 14, 1903, and the second was transferred to the Department by the same act, being a consolidation of the Bureau of Statistics of the Treasury Department and the Bureau of Foreign Commerce of the State Department.

A short history and description of the work of each of these several bureaus appears under its respective heading.

The act approved September 26, 1914, creating a Federal Trade Commission, provides that upon the organization of the commission and the election of its chairman the Bureau of Corporations, which was created by this Department's organic act, shall cease to exist, and that all clerks and employees of this Bureau shall be transferred to and become clerks and employees of the commission.

DUTIES ASSIGNED TO OFFICE OF THE SECRETARY.

The duties of the Office of the Secretary of Commerce are largely of a supervisory nature, but embrace also some matters not properly coming directly under one of the several bureaus of the Department. The organization consists of the offices of the Secretary, Assistant Secretary, Solicitor, and Chief Clerk, the Disbursing Office, the Appointment Division, and the Divisions of Publications and Supplies. Each of these units has assigned to it certain well-defined duties, as indicated under the headings which follow.

SECRETARY OF COMMERCE.

The organic act of February 14, 1903, creating the Department, as modified by the act of March 4, 1913, creating the Department of Labor, provides for a Secretary of Commerce, whose term of office shall be the same as that of other Cabinet officers. The provisions of Title IV of the Revised Statutes with amendments thereto are made applicable to this Department. The organic act also provides for an Assistant Secretary, a Chief Clerk, and a Disbursing Clerk.

Under its organic act it is the duty of the Department to foster, promote, and develop the foreign and domestic commerce, the mining, manufacturing, shipping, and fishery industries, and the transportation facilities of the United States, and the Secretary of Commerce is charged with the responsibility of carrying out the purpose of the Department as thus broadly outlined. Specifically, however, the powers and duties of the Secretary may be briefly summarized as follows:

The administration of the Lighthouse Service, including the establishment and maintenance of aids to navigation.

The taking of the census.

The making of coast and geodetic surveys.

The collection and publication of statistics on foreign and domestic commerce, and the promotion and development of the foreign and domestic commerce of the United States.

The investigation of the cost of production, including field investigation at home and abroad.

The inspection of steamboats and the enforcement of laws pertaining thereto for the protection of life and property.

The propagation and distribution of useful food fishes and the supervising of Alaskan fur-seal and salmon fisheries.

Jurisdiction over merchant vessels, including their registry, measurement, licensing, entry, clearance, etc., and the enforcement of the act requiring wireless equipment on vessels.

The standardization of weights and measures.

The formulation of regulations (in conjunction with the Secretaries of the Treasury and Agriculture) for the enforcement of the food and drugs act and the insecticide act.

It is the further duty of the Secretary of Commerce to make such special investigations and furnish such information to the President or Congress as may be required by them on the foregoing subject matters and to make annual reports to Congress upon the work of his Department.

By the act of March 2, 1907, the Secretary of Commerce is created a trustee of the Foundation for the Promotion of Industrial Peace.

ASSISTANT SECRETARY.

The Assistant Secretary performs such duties as are prescribed by the Secretary, and in his absence acts as head of the Department.

SOLICITOR.

The office of the Solicitor of the Department of Commerce was authorized by the legislative act of March 18, 1904. The Solicitor, who is an officer of the Department of Justice, is the chief law officer of the Department. His duties are to act as legal adviser to the Secretary of Commerce and the chiefs of the various bureaus, and to render opinions on questions of law arising in the course of business in the Department. He prepares and examines all contracts and bonds entered into or required by the Department, and has charge of the preparation of all legal papers to which the Department is a party. He also renders such legal service in connection

with matters arising in the administrative work as may be required of him by the Secretary or the Attorney General.

The Assistant Solicitor, who acts as Solicitor in the absence of the latter, is charged with the general superintendence of the clerical force of the office. He also has general charge of the preparation and examination of all legal papers of the Department, and performs other legal service in connection with the work of the office.

CHIEF CLERK AND SUPERINTENDENT.

The Chief Clerk and Superintendent enforces the general regulations of the Department, exercises general supervision over its employees, and superintends all of the Department's buildings in the District of Columbia. He is charged with the general supervision of all expenditures from the appropriations for contingent expenses and rent; the receipt, distribution, and transmission of the mail; the telegraph and telephones; the library and the stock and shipping section of the Department; and of all the property and equipment of the Department. He also discharges all business of a miscellaneous character which does not come specifically within the scope of one of the regular bureaus.

DISBURSING CLERK.

The Disbursing Clerk, whose office was created by the act establishing the Department, has general supervision of the financial transactions of the Department. In his office are kept the appropriation ledgers covering all appropriations made for the support of the Department, and all transactions, whether by the Treasury Department or any bureau or office of the Department, affecting those appropriations are recorded therein.

It is his duty to prepare for submission to the Secretary of the Treasury, to be forwarded to Congress in accordance with law, all estimates covering appropriations desired for the various activities of the Department.

He disburses all appropriations made for the support of the Department with the exception of those for the support of the Coast and Geodetic Survey and most of the appropriations for the Lighthouse Service at large, which are disbursed by special disbursing agents appointed for that purpose.

He prepares for the signature of the Secretary all requisitions for advances of funds from appropriations under the control of the

Department, and makes the proper entries in the appropriation records of the Department kept in his office.

All claims against the Department received for payment by the Disbursing Clerk are given an examination to determine whether they are legal claims against the Government and are paid either by check or by cash, according to the nature of the account.

The collections by the Department covering amounts for property sold and various other miscellaneous receipts are handled through and accounted for in the office of the Disbursing Clerk.

APPOINTMENT DIVISION.

The Appointment Division was organized in February, 1904. The position of Chief of the Division was created by the act making appropriations for the legislative, executive, and judicial expenses of the Government for the fiscal year ended June 30, 1907.

The duties of the Appointment Division involve the supervision of matters relating to appointments, transfers, promotions, reductions, removals, and all other changes in the personnel, including applications for positions and recommendations concerning the same, and the correspondence connected therewith; the preparation and submission to the Secretary of all questions affecting the personnel of the Department in its relations to the civil-service law and rules; the preparation of nominations sent to the Senate and of commissions and appointments of all officers and employees of the Department; the preparation of official bonds; the compilation of statistics in regard to the personnel, including material for the Official Register, and the custody of oaths of office, records pertaining to official bonds, service records of officers and employees, correspondence and reports relating to the personnel, reports of bureau officers respecting the efficiency of employees, and records relating to leaves of absence. The Chief of the Division signs notices of appointments and other changes affecting the personnel of the Department.

DIVISION OF PUBLICATIONS.

The preliminary work looking to the organization of the Division of Publications was begun in April, 1903, by the detail of a clerk from the then Bureau of Statistics, one of the bureaus transferred to the new Department by the act of February 14, 1903, though the

Division was not formally organized until July 1, 1903. The purpose in creating a division of publications was to have in one central office complete control over the Department's publication work and over all expenditures for the same, in order to secure uniformity and effect economy. The Division is charged with the conduct of the business which the Department transacts with the Government Printing Office, and with general supervision over all printing for the Department, including editing and preparing copy, illustrating and binding, and keeping records of expenditures. It has in charge also the distribution of publications, the maintenance of mailing lists, the advertising done by the Department, and the correspondence which its various duties entail.

DIVISION OF SUPPLIES.

The Division of Supplies is charged, under the immediate direction of the Chief Clerk, with the purchase and distribution of all supplies for the use of the Department in Washington, except certain supplies for the Coast and Geodetic Survey and the Bureau of Standards. It also purchases and distributes office supplies and equipment for the field services. All accounts under the appropriations for contingent expenses and rent are maintained in this Division.

The Chief of the Division of Supplies, by virtue of an order of the Secretary, is Auditor of Property Returns, and a record of all property in the custody of those bureaus and offices of the Department rendering returns to the Secretary is maintained in his office. He is, by virtue of an order of the Secretary, Chairman of the Board of Survey, for the examination and condemnation of un-serviceable property and the disposition of same by public auction or otherwise. The record of all sales of property belonging to the Department within the District of Columbia are maintained in his office.

The annual contracts made by the Department for the hauling of ashes and rubbish, the laundering of towels, the shoeing of horses, and the care of clocks are handled in the Division.

BUREAU OF THE CENSUS.

HISTORICAL.

Decennial censuses, 1790-1900.—Before the adoption of the Constitution, which provided for a decennial enumeration on which to base representation and direct taxation, estimates of the colonial population had been purely conjectural. The first enumeration after the establishment of our present form of government was made, under the act of March 1, 1790, by United States marshals, who made their returns to the President. Each marshal was empowered to employ as many assistants as he deemed necessary. The decennial enumerations continued to be made by United States marshals and their assistants until and including the census of 1870. Beginning with the Second Census (1800), the Secretary of State had general supervision, until the establishment of the Department of the Interior (1849), when the Census Office was placed under that Department, where it remained until 1903. On July 1 of that year, under the act approved February 14, 1903, it was transferred to the Department of Commerce. By order of the Secretary, dated July 1, 1903, the name "Bureau of the Census" was adopted.

In January, 1800, two learned societies memorialized Congress to enlarge the scope of the census inquiries, and Congress provided for the collection, at the Third Census (1810), of certain industrial statistics upon schedules prepared by the Secretary of the Treasury. At this enumeration "an actual inquiry at every dwelling house" was prescribed.

At the Fourth Census (1820) a limited number of industrial and occupation statistics were gathered. The Fifth Census (1830) related to population only, and for the first time uniform printed schedules were used. The Sixth Census (1840) extended its inquiries to occupations of the people and included industrial and

commercial statistics. The census of 1840 marks the beginning of an effort to make the decennial enumeration the instrument for ascertaining something beyond the mere number of persons of each sex and the numbers embraced within each of certain broad age groupings. Prior to that census nothing had been done systematically to show the growth and development of the country's industries and resources.

The Department of the Interior took up the supervision of the census in 1849, the first to be taken under its direction being the Seventh Census (1850). At this census six schedules were used, relating, respectively, to (1) free inhabitants, (2) slave inhabitants, (3) mortality, (4) productions of agriculture, (5) products of industry, and (6) social statistics. This radical enlargement of the statistical field covered marks an epoch in the history of census taking in the United States.

The Eighth (1860) and Ninth (1870) Censuses were taken under the act of May 23, 1850, which provided for and governed the Seventh Census. The work of the Eighth Census was completed under the Commissioner of the General Land Office. Tallying machines were first used in the Ninth Census.

In 1869 and 1870 a special committee of Congress investigated in detail census needs, and the report of its chairman, General Garfield, formed the groundwork of the Tenth Census.

An unsuccessful effort to establish a quinquennial census was made in 1875.

The Superintendent of Census was first appointed by the President, by and with the advice and consent of the Senate, at the Tenth Census (1880), the duties pertaining to this position having theretofore been discharged by a superintending clerk or superintendent, appointed by the head of the Department to which the Census Office was attached. At this census (1880) the services of United States marshals were dispensed with, and supervisors of census were appointed by the President and confirmed by the Senate, the supervisors, in turn, nominating enumerators in their respective districts. The tallying machines introduced at the Ninth Census were again employed at the census of 1880.

Provision was made in the census act of 1880 for an interdecennial census, in 1885, by any State or Territory, the Federal Government to bear a portion of the expense. Three States and two Territories availed themselves of this opportunity.

The census of 1880, in the variety of its investigations and in completeness of detail, marks the beginning of the third era in census taking in this country. The enumerations prior to 1850 had in effect amounted to little more than a count of the population, and its classification according to sex and broad age groups, though some advance along the line of industrial statistics had been made. The three censuses taken under the law of 1850, although decided improvements over the earlier enumerations, were deficient in many respects. The census of 1880, by reason of the changes made in the methods of supervising and collecting data, and of the employment of experts to make special investigations, enabled the Nation to know more accurately the facts concerning its population, wealth, industries, and varied resources.

The census of 1890 was taken along the same comprehensive lines as the preceding census. It was not intended originally to follow the plan of the Tenth Census, but the law of March 1, 1889, under which the Eleventh Census was taken, supplemented by later legislation requiring information as to "farms, homes, and mortgages," resulted in practically as many different subjects of inquiry. The work of the census was assigned to 25 divisions, each devoted to some special branch or feature. An electrical system of tabulation was used for the first time in compiling the statistics relating to population and mortality and to crime, pauperism, and benevolence. The work was completed by the Commissioner of Labor, by direction of Congress.

The census of 1900 was taken under the act of March 3, 1899, by which the Director of the Census was given entire control of the work, including the appointment of the statisticians, clerks, and other employees of the Census Office. The decennial work was limited to inquiries relating to population, mortality, agriculture, and manufactures, but provision was made for the collection of statistics relating to various special subjects after the completion of the decennial work. This division of the work constituted a radical departure from the course pursued at the censuses of 1880 and 1890, at which the effort was made to carry on, practically simultaneously, the work relating to twenty or more distinct subjects of investigation. The general reports of the Twelfth Census, comprised in ten quarto volumes, were published, in conformity with the requirements of the census act, on or before July 1, 1902, or within two years from the date set for the legal termination of the

enumeration work. The system of electrical tabulation, introduced at the Eleventh Census, was again employed in the work of the Twelfth, after a competitive test, and was utilized to advantage in the tabulation of the statistics of population, mortality, and agriculture.

Establishment of permanent bureau.—The necessity for the establishment of a permanent statistical bureau to which the work of the decennial census might also be intrusted was recognized, indirectly at least, as early as 1845, and recommendations for the establishment of a national bureau of statistics were embodied in the annual reports of the Secretary of the Interior for the years 1860 to 1865, inclusive.

Similar suggestions were made at later dates for the establishment of a central bureau of statistics at Washington, but no direct action toward providing for a permanent census office, as such, was taken by Congress until February 16, 1891, when the Senate directed the Secretary of the Interior to consider and report on the expediency of the establishment of a permanent census bureau. No final action in the matter was taken by Congress, however, and nothing more was done until March 19, 1896, when the Commissioner of Labor was directed to report to Congress for its consideration, as soon as practicable, a plan for a permanent census service. The Commissioner of Labor, under date of December 7, 1896, reported, as thus directed, a tentative organic administrative act by which a census office, independent of any of the executive departments, was to be established, leaving the details of the Twelfth and subsequent censuses to the officers having them, respectively, in charge. Nothing came of this effort, however, and no provision was made for a permanent census office until the passage of the act of March 6, 1902, which made permanent, after June 30, 1902, the Census Office temporarily established by the act of March 3, 1899. The act approved July 2, 1909 (36 Stat., 1), entitled "An act to provide for the Thirteenth and subsequent decennial censuses," and several later acts of varying though less importance, amplified considerably the duties of the Bureau and constitute the larger part of the law under which it now operates.

WORK OF THE BUREAU.

The Bureau of the Census is charged with the duty of taking the decennial censuses of the United States, of making certain

other statistical investigations at regular intervals, and of collecting such special statistics as may be authorized by law from time to time. The last decennial census (1910) covered the subjects of population, manufactures, mines and quarries, and agriculture. An intermediate census of manufactures is taken in the fifth year after the decennial census. The act establishing the permanent Census Bureau requires that, after the completion of the regular decennial census, the Director of the Census shall decennially collect statistics relative to the defective, dependent, and delinquent classes; crime, including judicial statistics pertaining thereto; social statistics of cities; public indebtedness, expenditures, and taxation; religious bodies; transportation by water, and express business; savings banks and other savings institutions; mortgage, loan, and similar institutions; and the fishing industry, in cooperation with the Bureau of Fisheries. Every five years statistics must be collected relating to street and electric railways, electric light and power stations, and the telephone and telegraph industries. Biennially the Official Register of the United States is prepared and published. Annual statistics must be gathered relating to births and deaths in States and cities maintaining efficient registration systems; the finances of cities having a population of 30,000 and over; the production and distribution of cotton; and the quantity of leaf tobacco on hand.

The carrying on of these inquiries involves the collection of the necessary data by mail or by personal visits of employees to individuals and commercial establishments; the subsequent assembling, tabulation, and compilation of the information secured; and the publication in reports of tables setting forth the data, with comparisons, percentages, averages, textual comment, maps, and diagrams. These reports form a list of publications which in the course of ten years comprises upward of 400 unbound or paper-bound bulletins of a more or less temporary character, and over 50 bound quarto volumes.

The following brief statement conveys only a superficial idea of the work involved in carrying on the functions mentioned:

Decennial census of population.—The last decennial census was taken as of April 15, 1910. The general methods are as follows: Data concerning each individual with regard to name, sex, color or race, age, marital condition, nativity, citizenship, language, occupation, education, etc., are collected and transferred to

printed schedules by enumerators who make a house-to-house canvass under the direction of supervisors. These schedules are then forwarded to the Bureau. The office work consists of the following steps: (1) A count of the population direct from the schedules for the purpose of calculating the pay of the enumerators, and in order that, after subsequent careful examination of the schedules to determine their accuracy, the population of the various localities and States, and ultimately of the United States as a whole, may be announced as promptly as possible; (2) such editing of the schedules as is necessary to prepare them for the punching clerks, particularly with reference to the returns of mother tongue and occupation; (3) the punching of a card for each individual making up the population, showing, by the positions of the punched holes, all the facts appearing on the schedule concerning him, this work being done by means of a machine; (4) the verification of the cards by means of electrical machines which automatically reject cards in which any of the required holes have not been punched or in which the holes are inconsistent with each other, and the correction of such rejected cards; (5) the sorting of the cards by means of electrical sorting machines into main groups, as determined, for example, by sex, color, or nativity, several different sortings being required at the different stages of the work; (6) the tabulation of the data indicated on the cards by means of electrical tabulating machines, it being necessary to run the cards through the machines several times in order to take off all of the data; (7) the compilation of the statistics for publication:

Decennial census of agriculture.—A separate schedule is provided for each individual farm and contains numerous questions pertaining to the farm and its productions, including name and address of farmer and his color or race, country of birth, and age; acreage, value, and tenure of farm; number and value of domestic animals; quantity and value of live-stock products; and acreage, quantity, and value of crops. These data are collected and transferred to the schedules by the enumerators of the population census, and are tabulated in the office by the aid of adding machines.

Decennial census of mines and quarries.—This inquiry is made by the Bureau of the Census in collaboration with the United States Geological Survey, which collects annual statistics of mineral production. The investigation covers, among other items,

such matters as geographic distribution of industry; nature of organization; value of products; capital invested; expenses of operation and development; number, sex, and age of persons engaged; hours of labor; land tenure; and power. The information is collected on schedules by special agents or by clerks detailed from the office, a general schedule for all establishments, as well as numerous special-industry schedules, being used. The statistics on the schedules are examined in the office and are tabulated by the use of adding machines.

Quinquennial census of manufactures.—This census covers all manufacturing establishments conducted under what is known as the factory system, exclusive of so-called neighborhood, household, and hand industries, but including steam laundries. By a special provision of the Thirteenth Census Act, retail slaughtering establishments are also canvassed in order to secure an enumeration of animals slaughtered for food and of hides procured. The inquiry as to manufactures covers character of ownership of the establishment; number, sex, and age of wage earners and other persons engaged; and capital, wages, cost of material, other expenses, and value of products. Additional data are also ascertained with regard to the quantities of the principal products manufactured and of the principal materials used. This information is collected and tabulated in substantially the same manner as that obtained in the mines and quarries inquiry.

Biennial preparation of Official Register of the United States.—The Official Register is published about December 1 of each year in which a new Congress assembles, and relates to the preceding July 1. In it are listed, by name, in alphabetical order, all Federal civilian employees except those in the Postal Service. Limited data as to office in which employed, salary, legal residence, etc., are included.

Annual inquiries.—The collection of statistics of cities involves the abstracting, from the office records of municipalities having a population of 30,000 and over, of data relating to the total expenditures for city government and for specified public services and objects, the revenue derived from all sources and from each specified source, and the amount and character of municipal debt. The information is secured on schedules by employees sent from the Bureau to the various cities, the results being compiled in the office. Special inquiries as to the operations of particular branches of city administration—such as those in charge of schools, of parks, of sewers, etc.—are made from time to time.

The work of gathering statistics of births and deaths involves the receipt and recording of transcripts of the original certificates thereof, furnished by persons selected for the purpose by the State and city authorities. The transcripts are tabulated in the office by methods similar to those used in the population census. The greater part of this work is in connection with death statistics, which are compiled so as to show general and specific death rates; summaries of deaths, by causes, sex, and age, by color and nativity, and by urban and rural localities; and average death rates in States and cities.

The cotton statistics assembled by the Bureau are collected in the cotton-producing States by local agents, and elsewhere by mail or by employees detailed from the office. The results of the canvass are issued in the form of annual reports on the production, distribution, and consumption of cotton and cottonseed products; monthly reports showing cotton consumed and on hand in manufacturing establishments and warehouses; ten summaries showing amount of cotton ginned, compiled during the cotton-ginning season from telegraphic reports; and three summaries, compiled during the crushing season, showing amounts of cotton seed crushed and linters obtained.

A semiannual statement is issued showing the amount of leaf tobacco on hand in factories and warehouses.

Geographer's division.—The work of properly and economically dividing the country into enumeration districts, and of preparing maps, etc., to accompany and illustrate reports, is performed by a staff of employees under the charge of the geographer.

Mechanical appliances.—The mechanical appliances used in the census work include a large number of punching, sorting, and tabulating machines, many of which have been devised and wholly or partially constructed, or have been modified, by the mechanical force of the Bureau. This work, with that of maintaining the machines in operation, calls for a considerable amount of expert service, the constant aim being to produce improvements with a view to economizing and accelerating the work of the machines. The mechanical equipment used during the Thirteenth Census included 200 hand punching machines, 300 electric punching machines, 17 card-sorting machines, 96 card-tabulating machines, and over 350 adding machines.

ORGANIZATION.

The organization of the Bureau is of a twofold nature—one for intercensal years, the other comprising a largely expanded force during decennial “census periods.” The former is provided for by the act of March 6, 1902, establishing the permanent office, and is modified from time to time by annual appropriation acts. Special provision is made by Congress for the expanded force during the census period, which covers three years beginning on July 1 of the year preceding that in which the enumeration is made.

The permanent force may, briefly, be said to consist of a Director, chief clerk, geographer, four chief statisticians, eight chiefs of division, a small number of expert special agents, and such clerks and mechanical and subclerical employees as may be authorized. The total force at present is approximately 600. There is also a force of special agents, numbering about 750, who are residents of the cotton-growing States, and whose duties (which are occasional) consist of collecting statistics of cotton ginned, consumed, and on hand in their respective localities.

The force during the census period is expanded by the addition of a few officials, such as an Assistant Director, an appointment clerk, and a disbursing clerk, and a large number of employees in the clerical and subclerical grades. During the Thirteenth Census period this force in Washington reached a maximum of nearly 4,000. Supervisors and enumerators, to the numbers of approximately 330 and 70,000, respectively, were also employed for the actual enumeration in the field.

The force of the Bureau during either census or intercensal periods is divided into groups, according to the nature of the inquiries which constitute its main functions. These groups during a census period are as follows: (1) Administrative force; (2) Division of Population; (3) Division of Agriculture; (4) Division of Statistics of Cities; (5) Division of Manufactures; (6) Division of Vital Statistics; (7) Division of Publication; (8) Division of Revision and Results; (9) Geographer's Division; and (10) mechanical force.

The work of these divisions is sufficiently indicated by their designations. Their strength, except in the case of the administrative force, varies considerably from time to time, as the amount of work devolving on the divisions increases or diminishes.

UNITED STATES COAST AND GEODETIC SURVEY.

A survey of the coast of the United States was authorized by act of Congress of February 10, 1807, and the plans formulated by F. R. Hassler, an eminent scientist of Swiss birth, were adopted. The necessity of securing instruments from abroad and the breaking out of hostilities with Great Britain delayed the organization of the Survey under the Treasury Department until 1816. The work had just begun when, by act of April 14, 1818, Congress repealed so much of the statute of 1807 as authorized the employment of other than Army and Navy officers in the Survey.

No surveys were made under the War Department, and after a full consideration of the unsatisfactory results obtained in the survey made under the Navy Department, as repeatedly suggested by the Secretary of the Navy and others, Congress revived the law of 1807, with somewhat extended scope, by the act of July 10, 1832, and the work was again placed under the Treasury Department.

On March 11, 1834, the Survey was transferred to the Navy Department, and on March 26, 1836, it was retransferred by President Jackson to the Treasury Department, where it remained until July 1, 1903, when it was placed under the Department of Commerce by act of Congress approved February 14, 1903.

By the act of March 3, 1843, prompted by suggestions of the expediency of a retransfer of the Survey to the Navy Department, Congress provided that the President should organize a board to make an intelligent and efficient inquiry for the development of a plan of permanent organization for the Survey. The report of this board, giving in detail its plan for reorganization, was approved by the President April 29, 1843, and the work of the Survey has ever since been modeled on the lines then laid down. For fifty years prior to 1898 nearly one-half of the vessels of the Survey were manned and officered by the Navy, but since the war with Spain these duties have devolved exclusively upon the officers and employees of the Survey.

By including in the appropriation for the Coast and Geodetic Survey a provision to "man and equip" the vessels of the Survey,

Congress in 1900 placed the service on a purely civil basis, as at present organized.

The name "Coast and Geodetic Survey" was authorized by its use in the sundry civil appropriation act approved June 20, 1878.

FIELD WORK.

The Survey is a bureau of the Department of Commerce, and its work is under the direction of a Superintendent and an Assistant Superintendent, with an office at Washington and a suboffice at Manila, P. I. Its original and principal duty was the survey of the coasts of the United States, but many other duties too numerous to mention have been imposed by law from time to time as the development of its operations showed the wisdom of such legislation.

The scope of the Survey has been extended from time to time and now includes surveys of Alaska, the Hawaiian Islands, Philippine Islands, Porto Rico, and "other coasts under the jurisdiction of the United States."

By joint resolution of February 5, 1889, the United States accepted the invitation of the Imperial German Government to become a party to the International Geodetic Association, and delegates to meetings of the association are by law officers of the Coast and Geodetic Survey, to be appointed by the President.

The use of the facilities of the Survey for research and study by scientific investigators and students of any institution of higher education is granted by law (31 Stat., 1039), and resolution of April 12, 1892.

The general continental coast line of the United States, including Alaska, measures 11,500 miles, which is increased by the indentations and convolutions of the littoral of its tidal rivers, islands, bays, sounds, and gulfs to 91,000 miles; and to these figures must be added, because of the recently acquired insular possessions, 5,400 miles of general coast line and 12,100 miles of detailed shore line. For the use of the mariner and surveyor the results of the Survey's operations are published in 645 charts; in Tide Tables, which, prepared annually in advance of the year for which predictions are made, give the daily high and low values of the tide for each day of the year for the ports of the United States and for the leading ports of the world; in 21 volumes of Coast Pilots and Sailing Directions; and in weekly notices to mariners, published

in cooperation with the Bureau of Lighthouses. These publications supply detailed information concerning the navigation of the coasts and the approaches to the harbors except in the case of un-surveyed portions of Alaska and the Philippines.

In addition to the foregoing the Survey issues many other publications containing the results of its work, which are distributed free to schools, scientific institutions, libraries, and individuals upon request.

A survey of the Atlantic, Gulf, and Pacific coasts of the mainland of the United States, except in the case of Alaska, has been made, but supplemental work is necessary, and also a continuous revision on account of changes due to tides and currents; to the improvement of rivers and harbors; to the requirements of deep-draft vessels that are now essential for the necessities of commerce and national defense; and to the needs of the rapidly increasing fleet of motor boats.

Only two steamers and one schooner owned by the Survey are available for this work on the Atlantic and Gulf coasts and for the surveys and examinations which have to be made to keep the information in the Coast Pilot volumes up to date.

On the Pacific coast only two steamers for outside work and two steamers and two large launches for inshore work are available to meet the pressing demands for accurate surveys in Alaskan waters and for supplemental and revision work on the coast of the United States and Hawaii.

The acquisition of Porto Rico, Hawaii, and the Philippines largely increased the responsibilities of the Survey. A survey of Porto Rico has been made, but it should be supplemented by wire-drag work.

The Philippine archipelago comprises 3,141 islands and islets, and as there is no point in the group distant more than 60 miles from the sea the importance of correct charting of its vast system of waterways is self-evident. This duty was one of the first undertaken in the islands by the United States, and in December, 1900, a suboffice of the Coast and Geodetic Survey was opened in Manila, and astronomic, topographic, and hydrographic parties began operations without delay. The importance of the work in the Philippines was at once recognized by the insular government, which from the beginning has generously cooperated with the

Survey. The field results receive their preliminary discussion and are prepared for publication in Manila. A force of native draftsmen is employed in the Manila office in the preparation of chart drawings, which are engraved and printed in Washington, D. C. One steamer, owned by the Survey, and four steamers furnished by the insular government and operated by the Survey are available for work in the islands.

An important operation of the Survey is the determination of standard elevations of points throughout the country by lines forming a network of precise levels, which incidentally makes available in this form useful results from the thousands of miles of levels run for works of public improvement.

Magnetic surveys at sea and on shore, the results of which are essential for the construction of charts and necessary for the property and political subdivision of this country, where the compass has been so generally used in locating property and boundary lines, form an important part of the activities of the Survey.

In addition to his other duties, the Superintendent, as Commissioner on the part of the United States, is charged with surveying and marking the southeastern boundary of Alaska from Portland Canal to Mount St. Elias, and of the meridional boundary from Mount St. Elias to the Arctic Ocean, the field work of which has been completed. Also under his direction, as Commissioner, the work of surveying and re-marking the northern boundary between the United States and Canada, except a portion of the water boundary, is in progress.

An officer of the Survey is a member of the Mississippi River Commission.

OFFICE WORK.

The office in Washington is the executive center of the Service and is equipped to handle the wide range of duties imposed upon the service by law, with divisions dealing with the various branches of the work, which renders it possible to prepare and publish all information obtained in the forms most useful to navigators and to the public at large.

In addition to the administrative divisions, the office work is handled by the following divisions: Computing, Terrestrial Magnetism, Tidal, Chart Construction, Instrument, and Tidal Research.

In the Computing Division are discussed with the highest mathematical refinement the observations made in the field, the results being prepared for their final publication and utilization.

In the Division of Terrestrial Magnetism the observations made by the parties in the field and at the magnetic observatories are reduced and prepared for publication in the form of tables and charts for public use. Information in regard to the magnetic variation in the past is furnished to surveyors and others interested and the variation noted on the compasses shown on the charts of the coast is verified before publication.

In the Tidal Division are discussed the tidal phenomena on such a scale that the Tide Tables of the Survey, published annually in advance, furnish the mariner with the values of the high and low tides at 3,270 ports selected from all over the world.

The Chart Construction Division comprises the drawing, engraving, electrotype, photograph, and printing sections, all engaged in the construction, maintenance, and publication of charts. The drawing section assembles and compiles all chart information received, including the results of the topographic and hydrographic work, harbor improvement surveys of the Army Engineers, surveys by local engineers, additions and changes in lights and buoys, and newly discovered rocks and other dangers. - From this information new chart drawings are prepared for engraving or photolithography and old charts are brought up to date. The engraving section engraves the new charts on copper plates and makes the corrections required on existing plates. The electrotype section reproduces the engraved copper plates for printing plates, so that worn printing plates can be replaced by new ones. The photograph section makes negatives for those charts published by photolithography, makes photographic copies of original surveys required by other departments and the courts, and etches on copper some of the new charts. The printing section prints from copper plates and by photolithography over 140,000 charts a year.

The Instrument Division constructs instruments when necessary, and makes repairs. Some of the instruments made for the use of the Survey have been adopted by other nations for national work. One of the late achievements is the construction of the most effective tidal predicting machine in existence. This machine takes into account 37 of the tidal influencing components, and is

capable of producing a year's record of predictions of the daily high and low waters for a port in less than ten hours, an undertaking not possible by direct computation using 100 computers.

The Tidal Research Section of the Office deals with all matters of research relating to tides and currents and to physical hydrography.

The annual report of the Superintendent of the Survey gives an account of activities which are of value to the mariner, the hydrographer, the surveyor, the engineer, the landowner, and the physicist, and forms a record which covers the practical needs of navigation and makes a national contribution to the knowledge of the dimensions and configuration of the globe.

A more extended description of the organization and functions of the Survey will be found in the pamphlet entitled "The United States Coast and Geodetic Survey: Description of its Work, Methods, and Organization," which those interested may obtain on application.

BUREAU OF FISHERIES.

The Bureau of Fisheries owed its inception to the widely entertained opinion that the fisheries in general were diminishing in value and importance on account of the intensity and methods with which they were prosecuted, a view which investigation has shown to be justified with respect to many fishes and other valuable aquatic animals. The American Fish Culturists' Association (now the American Fisheries Society) took a leading part in advocating an investigation of the subject, and largely through its influence and the representations of State fishery officers Congress passed a joint resolution, approved February 9, 1871, which provided for the appointment of a Commissioner of Fish and Fisheries, who was directed to conduct investigations concerning the facts and the causes of the alleged diminution and the feasibility of remedial measures. This was the beginning of one of the earliest and most effective conservation movements undertaken by the Federal Government.

Until July 1, 1903, the establishment was independent, reporting directly to Congress, and was known as the United States Commission of Fish and Fisheries, but on the organization of the Department of Commerce it was included by law in the new Department and the name was changed to its present designation.

The original conception of the Bureau was a body for scientific, statistical, and practical investigation of the fisheries, and that phase of its work always has been prominent; but it was soon found that to secure the practical end which dictated its formation it should be clothed with powers to make its own findings effective. This was in part accomplished by an act approved June 10, 1872, which gave authority for the propagation of food fishes, a branch of the service which has grown until at present it constitutes the largest part of the Bureau's activities.

Until recently the Bureau was wholly without administrative or executive control of the fisheries, as these functions are vested in the several States within whose territorial limits the fisheries are located.

There existed, and in major part still exists, the anomalous condition of an organization national in scope but performing duties of local importance which is without power to give direct effect to some of its activities or to adequately protect the results of others. This condition has caused some embarrassment in places, and has often retarded the practical application of the results of investigations and experiments, but on the whole the results are better than might be expected and in many cases are highly satisfactory. Acting in an advisory capacity, the Bureau has been able to exert a powerful influence on the fisheries legislation of the States. Local authorities and interests hold its work in high regard, and, appreciating that its advice is authoritative and disinterested, frequently seek it. Members of its staff are called on to serve with and assist State commissions and, frequently, to address State legislative bodies on topics connected with the administration of the fisheries and to assist in the drafting of State fisheries laws.

The published reports on special investigations not only contain facts the knowledge and understanding of which lie at the root of rational conservation of the aquatic resources of the States, but they often contain specific recommendations for new legislation and practical criticisms of that in force. These suggestions are generally given consideration by the States. They are often enacted into law and sometimes induce complete changes in the methods of administering important fisheries.

By an order of the Secretary of Commerce dated February 15, 1905, the Bureau for the first time became clothed with the administration and enforcement of fishery laws through the assumption of supervision of the salmon fisheries of Alaska. Subsequently by law this jurisdiction was extended to all of the fisheries of Alaska. On December 28, 1908, the Alaskan fur-seal service, which since the formation of the Department had been administered through the Secretary's Office, was transferred to the Bureau; and in 1910, by act of Congress and direction of the Secretary, supervision was assumed over all of the fur-bearing animals of the Territory.

The administration of the laws regarding Alaska fish and fur-bearing animals is exercised in Federal territory, and by act of Congress in 1906 the Department became charged with the duty, which is also exercised through the Bureau of Fisheries, of controlling in certain respects the sponge fishery prosecuted on the high seas off the coast of Florida.

In addition to the general executive duties performed by the Commissioner of Fish and Fisheries and the Deputy Commissioner, the work of the Bureau is organized as follows:

Division of Administration.—This division of the service is under the immediate direction of the assistant in charge of office, and exercises supervision of the accounting office, the office of the architect and engineer, the vessels of the Bureau, and the library, records, correspondence, and property. In this division are prepared contracts and land deeds, also plans and specifications for fish-cultural and biological stations and their related structures, and for engineering work in general. It is responsible for the purchase, maintenance, and repair of all vessels and boats, and for accounting relative to appropriations and property.

Division of Fish Culture.—This branch of the service, under an assistant in charge, has direction of all operations connected with the artificial propagation and distribution of fishes. Its practical work in 1914 was conducted through 36 fish-cultural stations and 94 sub or field stations, located in 34 States and the Territory of Alaska, and 5 specially devised railway cars engaged in distributing their product. It is the endeavor of the Bureau to hatch and plant fishes in sufficiently large numbers to compensate for the depletion of the natural supply through the fisheries, and the volume of its output has steadily increased until in 1914 it aggregated 4,047,643,417 fish and eggs. As the effects of fishing are more markedly manifested in circumscribed waters, most of the hatcheries are located in the interior, where they can more readily supply the inland lakes and streams, but some also are located in the coastal States for the hatching of fishes, such as shad and salmon, which run from the sea into the rivers for the purpose of spawning, and directly on the coast for the propagation of particularly important marine species, such as the members of the cod family, flatfishes, and lobsters. These operations have materially benefited some fisheries and have saved others from extinction. This division has also carried on particularly successful work in introducing valuable fishes in waters to which they were not indigenous and in rescuing fishes from overflowed lands where the recession of the waters would leave them stranded to die. It carries on its work independently or, in cases where public interest dictates, in cooperation with the States.

Division of Inquiry Respecting Food Fishes.—This division under an assistant in charge, continues the work for which the Bureau originally was instituted, enlarged to meet the requirements dictated by experience. The scientific work comprehensively covers the field of aquatic biology, as for a proper understanding of the requirements for the protection and fostering of the fisheries it is necessary to know not only the complete life histories of species of direct economic value, but also the habits of the food and enemies of those species and their relations to their physical and biological environments. An important feature of the work is furnishing advice and facts relating to fisheries legislation and administration. The division also conducts investigations and experiments tending directly to the increase of economic aquatic animals, especially those which, like sponges, oysters, mussels, and terrapin, are from their habits and nature not susceptible to the ordinary methods of fish culture, and in this way has added materially to the value of the fisheries.

The investigations and experiments are conducted by field parties or at the biological stations, of which there are two on the Atlantic coast, one in the Mississippi Valley, and a fourth to be constructed on the Gulf coast. There are also one especially equipped steamer for deep-sea investigations, one for coastal work, and a number of smaller craft for inshore and river duty.

The small permanent personnel, which is concerned chiefly with the work of more direct economic application, is supplemented as occasion requires by the employment of experts and investigators from scientific institutions. The facilities of the laboratories are, under certain conditions, extended to qualified independent investigators.

Division of Statistics and Methods of the Fisheries.—Under the direction of an assistant in charge, this division performs another of the original functions of the Bureau. The first duty to which the Bureau of Fisheries was assigned, namely, the investigation of the reported decrease of food fishes in New England, necessarily involved the collection of statistics of production, personnel, and capital. Since that time this branch of the work has been conducted without interruption, and in it have naturally been included the various other subjects affecting the economic and commercial aspects of the fisheries. Among its functions are (1) a gen-

eral survey of the commercial fisheries of the country; (2) a study of the fishery grounds with reference to their extent, resources, yield, and condition; (3) a study of the vessels and boats employed in the fisheries, with special reference to their improvement; (4) a determination of the utility and effect of the apparatus of capture employed in each fishery; (5) a study of the methods of fishing, for the special purpose of suggesting improvements or of discovering the use of unprofitable or unnecessarily destructive methods; (6) an inquiry into the methods of utilizing fishery products, the means and methods of transportation, and the extent and condition of the wholesale trade; (7) a census of the fishing population, their economic and hygienic condition, nativity, and citizenship; (8) a study of international questions affecting the fisheries; (9) the prosecution of inquiries regarding the fishing apparatus and methods of foreign countries.

Alaska Fisheries Service.—This service is in immediate charge of the Deputy Commissioner of Fisheries, and consists of three important subdivisions, namely, the fur-seal service, the salmon service, and the fur-bearing animal service.

The fur-seal service has to do with all matters pertaining to the fur seals of Alaska and to the control of the Pribilof Islands. The islands of St. Paul and St. George were set aside as a special reservation in 1869, and the entire group in 1910, and have since been continuously under Government supervision. As these islands are the only land to which the Alaskan fur seals resort, the administration of the fur-seal service is concerned primarily with the care and utilization of the seals, and, secondarily, with the maintenance and education of the native inhabitants of the islands, the care and utilization of the fox herds, and the protection of other animals found on the islands.

The sealing privileges of the Pribilof Islands were for 40 years leased to private companies, which paid to the Government a per capita tax on each seal killed; but since April, 1910, the Government has had in its own charge the business of taking and marketing sealskins. The killing of seals is limited to such males as are required for food for the natives.

The representatives of the Bureau on the seal islands include agents and caretakers, physicians, school-teachers, and a store-keeper. The agents are charged with local matters of administra-

tion pertaining to the seals, the foxes, the natives, and other interests.

Enforcement of the laws and regulations affecting all other fur-bearing animals of Alaska was imposed on the Bureau by act of Congress of April 21, 1910. This branch of the service has at present seven wardens and one special warden, whose duties are to see that the laws enacted by Congress and the regulations thereunder for the protection of the fur-bearing animals are observed; to make observations and investigations regarding the abundance, distribution, and habits of the fur animals, their food, diseases, and the condition of the fur in different localities at different seasons; and to inspect, so far as is possible, the furs offered for shipment from Alaska, and to enforce the regulations concerning shipments.

The salmon service, represented in Alaska by an agent, assistant agents, and an inspector, is charged with the enforcement of the laws and regulations relating to the salmon and other fisheries of Alaska, and with the inspection of fisheries, canneries, salteries, hatcheries, and other similar establishments. Other duties of this branch are to make such investigations and experiments as may be desirable or necessary for the improvement and conservation of the salmon and other fisheries.

Publications.—The publications of the Bureau of Fisheries consist of four series, as follows: (1) The annual report of the Commissioner and various special reports on different branches of the work; (2) the annual bulletin, which is made up of papers on miscellaneous subjects, frequently of a technical nature; (3) economic circulars, consisting of brief advance reports upon economic subjects to be more elaborately treated in subsequent papers, or containing information of interest to special localities or industries; (4) statistical bulletins giving, in tabular form, monthly and annual statements of the quantity and value of fish and aquatic products landed at the principal fishing centers.

The publications under the control of the Bureau are all distributed in pamphlet form as separate papers. The bound bulletins are congressional documents, and are distributed from the folding rooms of Congress.

BUREAU OF FOREIGN AND DOMESTIC COMMERCE.

HISTORY.

The Bureau of Foreign and Domestic Commerce was created by the legislative, executive, and judicial appropriation act approved August 23, 1912, which consolidated under that name the Bureau of Manufactures and the Bureau of Statistics. This action by Congress was predicated on a suggestion emanating from the Department, which in September, 1907, appointed a committee to inquire into its statistical work, and this committee after a very extensive inquiry recommended "that the Bureau of Manufactures and the Bureau of Statistics be consolidated into one bureau; and that the bureau thus formed be called the Bureau of Foreign and Domestic Commerce."

Bureau of Manufactures.—The Bureau of Manufactures was authorized by section 5 of the act of February 14, 1903 (the organic act of the Department), in response to a demand which had long since grown persistent for a Government office to be especially charged with the duty of fostering, promoting, and developing the manufacturing industries of the United States. The Bureau was organized in 1904 and at once commenced to build up in great part the service described on succeeding pages.

Bureau of Statistics.—The Bureau of Statistics, before being merged into the Bureau of Foreign and Domestic Commerce, had had almost a century of development.

The value of the systematic and careful collection of information concerning the status of our commerce was recognized early in our history; and, in response to resolutions of Congress, the Secretary of the Treasury made frequent reports on the subject, which were subsequently collected and published in two volumes of the American State Papers.

By act of Congress approved February 10, 1820, the regular collection and publication of statistics of our foreign commerce was undertaken. This information was gathered through the collectors of customs, and there was organized in the Treasury Depart-

ment a division of commerce and navigation, which collated and published the information thus obtained. Joint resolution of Congress of June 15, 1844, authorized the Secretary of the Treasury to direct the collecting, arranging, and classifying of statistical information showing each year the condition of agriculture and domestic trade, and to report on these subjects annually.

By act approved July 28, 1866, the Bureau of Statistics, with a Director, was established in the Treasury Department. The former division of commerce and navigation was consolidated with the Bureau of Statistics, and a broad range of subjects upon which to compile statistics was prescribed. The act of July 20, 1868, abolished the office of Director, provided that the Special Commissioner of the Revenue should superintend the Bureau, and provided for a Deputy Special Commissioner to have charge of the Bureau of Statistics. The office of Special Commissioner of the Revenue expired July 1, 1870, and the title of Chief of Bureau of Statistics was given to the officer in charge and afterwards authorized by law.

The work of the Bureau of Statistics was enlarged by act of March 3, 1875, and statistics relating to the internal commerce of the country were published from that year until 1912 under special appropriations.

The old law of 1820 omitted statistics relating to exports other than that borne in vessels, but the act of March 3, 1893, amending section 1 of the act of July 16, 1892, remedied this by providing for statistics of exports of commodities by railways and land carriages. By act approved April 29, 1902, the work of the Bureau was extended to include statistics of commerce with Alaska, Porto Rico, Hawaii, Philippine Islands, Guam, and other noncontiguous territory.

Bureau of Foreign Commerce in the State Department.—By the act of February 14, 1903 (the organic act of the Department), the Bureau of Statistics was transferred from the Treasury Department to the new Department, from and after July 1, 1903. The same act provided also for the transfer of the Bureau of Foreign Commerce from the State Department and for its consolidation with the Bureau of Statistics, the two to constitute one bureau to be called the Bureau of Statistics. By authority of section 11 of the act the Bureau of Trade Relations was organized in the State Department for the formulation and transmission of correspondence between the new Department and consular officers.

The Bureau of Foreign Commerce was, until July 1, 1897, the Bureau of Statistics of the Department of State. Owing to the confusion arising from the fact that there was also a Bureau of Statistics in the Treasury Department and a Division of Statistics in the Department of Agriculture, Congress authorized the change of the name to Bureau of Foreign Commerce on July 1, 1897, this name more clearly indicating the functions of the Bureau.

The Bureau had its origin in an act of Congress approved August 16, 1842, which made it the duty of the Secretary of State "to lay before Congress, annually, at the commencement of its session, in a compendious form, all such changes and modifications in the commercial systems of other nations, whether by treaties, duties on imports and exports, or other regulations, as shall have come to the knowledge of the Department." In a communication to the President of the Senate, February 4, 1857 (Ex. Doc. No. 35, 34th Cong., 3d sess.), Secretary of State Marcy called attention to a previous statement (in 1855) in which he said that "but three attempts had been made to comply with the requisitions of the act of 1842; the first by Mr. Secretary Webster in 1842, the second by Mr. Secretary Upshur in 1843, and the third, and last, by Mr. Secretary Calhoun in 1844." Mr. Webster, in 1842, recommended to Congress that the work "be intrusted to one person, under the direction of the Department, who should arrange and condense information on commercial subjects from time to time, as it should be received, and should have charge of the correspondence on these subjects with agents of the Government abroad."

No action was taken by Congress until 14 years later. By an act approved August 18, 1856 (11 Stat., 62), the act of 1842 was amended so as to make it obligatory upon the Secretary of State, in addition to changes and modifications in the commercial systems of other nations, to include in his annual report to Congress "all other commercial information communicated to the State Department by consular and diplomatic agents of this Government abroad, or contained in the official publications of other Governments, which he shall deem sufficiently important." It was further declared to be the duty of consuls and commercial agents to procure such information in such manner and at such times as the Department of State might prescribe, and the Secretary of State was "authorized and required to appoint one clerk who shall have charge of statistics in said department and shall be called 'Superintendent of Statistics.'"

"Thus," says Secretary Marcy, in his letter of February 4, 1857, "the 'Statistical Office of the Department of State,' which had been organized two years before for the preparation of a general Report on the Commercial Relations of the United States with Foreign Nations, in answer to a resolution of the House of Representatives, was, by that law, placed on a permanent basis."

The "Bureau of Statistics" was substituted for the "Statistical Office" July 1, 1874, under authority conferred by the legislative, executive, and judicial appropriation act of June 20, 1874, in an item providing a salary of \$2,400 each for six chiefs of bureau, including one of Statistics.

Until October 1, 1880, the duties of the Bureau were restricted to the preparation of annual and occasional reports from consular officers, but on that date the publication of the monthly Consular Reports was begun, in pursuance of a recommendation of Secretary of State Evarts, in response to which Congress, at the previous session, had made provision "for printing and distributing more frequently the publications by the Department of State of the consular and other reports." The daily publication of consular reports was begun January 1, 1898, by order of the Secretary of State of December 7, 1897. From July 1, 1905, the publication was known as "Daily Consular and Trade Reports," but since January 1, 1915, it has borne the name "Commerce Reports."

WORK OF THE BUREAU.

Broadly, the function of the Bureau of Foreign and Domestic Commerce is to promote commerce and manufacturing by collecting and distributing information for the use and benefit of commercial interests. In carrying out this function advantage is taken of the relations of the Bureau with many other branches of the Federal service.

Consular reports.—Use is made especially of the Consular Service, through the Department of State, to obtain reports on the current development of the trade of foreign countries and opportunities for the sale abroad of articles produced in the United States. This material is edited in the Bureau and distributed to the commercial public by means of the daily Commerce Reports and supplements thereto, and also by means of special bulletins and pamphlets and confidential circulars or letters.

Commercial attachés.—The Bureau's facilities for studying foreign markets for American goods have been greatly increased recently by the appointment of commercial attachés to represent the Department of Commerce in the more important commercial countries. These attachés are accredited to the embassies and legations of the United States in the capitals of the countries to which they are assigned. They will devote all their time to the study of commercial problems and will report the results of their investigations to the Bureau for publication in Commerce Reports or in monograph form. These reports, in general, will be supplemental to those now sent in by the consuls and commercial agents. Commercial attachés are now stationed at London, England; Paris, France; Petrograd, Russia; Berlin, Germany; Buenos Aires, Argentina; Rio de Janeiro, Brazil; Santiago, Chile; Lima, Peru; Peking, China; and Melbourne, Australia.

Commercial agents.—Further, the Bureau is equipped with a corps of field agents, called commercial agents, who supplement the work of consular officers through special investigations for which they are fitted by training or experience in various branches of commerce. These special investigations cover a wide range of subjects, such as the trade in cotton textiles, cottonseed products, machinery, lumber, boots and shoes and other leather goods, chemical products, and other articles of domestic manufacture or export. A special force of commercial agents has been assigned to Latin America, and the work of these investigators is supervised by a special staff at the Bureau in Washington—the Latin American Division.

Foreign tariffs.—To supplement this volume of commercial information there are distributed accurate statements concerning the customs tariffs of foreign countries, a work which is carried on currently by the Division of Foreign Tariffs. Not only are translations of these tariffs made and published at frequent intervals, but through consular reports and from other official sources there is maintained a record of the existing regulations with respect to customs charges in all foreign countries.

The publications of the Bureau issued in the tariff series usually present either a complete tariff of a particular country or the rates on a particular group of articles as applied in various countries. Recent publications of the latter nature are Tariff Series Nos. 29 and 30, which set forth the duties on office appliances and on motor vehicles and accessories, respectively, in all foreign countries.

As far as possible these published editions of foreign tariffs are revised to date, and, in addition, changes in foreign tariffs are noted in Commerce Reports and are reprinted in special pamphlets entitled "Foreign Tariff Notes." The Bureau, by virtue of its close relations with American consular officers, and its files of the current official publications of foreign countries, possesses exceptional facilities for keeping informed as to tariff rates and customs formalities incident to the entry of goods into foreign countries.

The tariff work of the Bureau of Foreign and Domestic Commerce is not rigidly restricted to customs duties and customs regulations. The Division of Foreign Tariffs of the Bureau gives attention also to closely allied subjects affecting our foreign commerce, such as the internal-revenue laws of foreign countries, the regulations for commercial travelers soliciting business abroad, and the requirements of foreign countries for consular invoices, merchandise marks, standards of purity, and the like. The United States diplomatic and consular officers report on these subjects, and translators and other assistants in the Bureau of Foreign and Domestic Commerce examine carefully the official publications of the foreign Governments in order that all information regarding foreign tariffs and these allied subjects may be kept up to date.

Commercial statistics.—Statistical information in regard to imports and exports is received by the Bureau in monthly and quarterly returns from the collectors of customs, showing the principal articles imported and exported, stating quantities where possible and values in all cases; the countries from which each article or group of articles was imported and to which each article or group of articles was exported. These statements are printed primarily in the Monthly Summary of Foreign Commerce and distributed to individuals and firms engaged in commerce, to commercial organizations, educational institutions, and libraries, and to such commercial and other newspapers of the country as may request the same.

The Monthly Summary also contains tables showing the principal articles forming the trade between the United States and its noncontiguous territories—Alaska, Porto Rico, Hawaii, the Philippine Islands, Guam, and Tutuila.

Other tables of imports, much more complete in detail, are published quarterly, showing the quantity and value of the imports entered for consumption, the rate of duty, and the duty collected on each article or group of articles; and these quarterly statements

are subsequently presented in the form of an annual statement. This statement of merchandise imported for consumption includes: (1) The merchandise entered for immediate consumption and duty paid upon its arrival at the port, and (2) merchandise withdrawn from warehouse for consumption on payment of duty. Merchandise entering the country and deposited in warehouse is not included in the statement of imports for consumption unless subsequently withdrawn from warehouse.

Annual statements of the commerce of the United States presenting trade movements in much greater detail than those of the Monthly Summary of Foreign Commerce are published in a volume entitled "Commerce and Navigation of the United States." This volume shows in great detail the trade by articles and countries, stating the countries from which each article or class of articles was imported and to which each article or class of articles was exported during a five-year period; also statements showing the movements of merchandise and of gold and silver by customs districts, the imports for consumption, and other statements showing details of the trade movements with foreign countries.

The Statistical Abstract of the United States, a volume of about 700 pages, presents in condensed form statements regarding the commerce, production, industries, population, finance, currency, indebtedness, and wealth of the country, and includes in addition to the compilations made by the Bureau of Foreign and Domestic Commerce the more important statistical data compiled by other branches of the Government, and with this a condensed statement of the commerce of the principal foreign countries. It is published annually.

Specific opportunities to extend trade.—Specific opportunities for the extension of American trade, transmitted by consuls, are published in Commerce Reports under the title "Foreign trade opportunities." Notes relative to opportunities for the sale of American manufactures to the Federal Government are also published under the heading "Proposals for Government supplies."

Plans and specifications for public and private works in foreign countries, as well as samples of articles for which a demand has been or may be created, often accompany reports by consular officers, commercial attachés, and commercial agents. Announcement of the receipt of these is made in Commerce Reports, and circulation of them is made by the Bureau, an endeavor being

made to reach as soon as possible the manufacturers likely to be interested.

The Bureau cooperates with representative trade organizations by conferences with their officers, by the use of membership lists for the distribution of confidential information, and by filing with them plans and specifications for work relating to the industry or industries represented by such organizations. Numerous individual requests for information from American manufacturers and exporters receive attention and endeavor is made to supply promptly all material in possession of the Bureau on a particular subject.

All of the trade information received is carefully indexed, and the Bureau has a record of reports on most lines of trade in foreign countries, and when requests for data on any particular line are received search is made through these records and all information available is furnished. If a subject regarding which information is sought is one of importance and interest to a number of concerns, such concerns are invited to submit a list of questions covering the facts desired, and these inquiries are sent to American consuls throughout the world. The results of these inquiries are subsequently published and distributed by the Bureau.

The bulletins and monographs of the Bureau on special statistical and commercial subjects now number several hundred, and cover a wide range of trade matters.

Trade directories.—The trade-directory work is an important branch of the Bureau's service to American exporters. In 1911 there was issued a "World Trade Directory," giving the names of importers in all countries of the world. This volume is now out of print, but may be consulted at the branch offices, which also have the revised lists that are constantly being received from consular officers. In 1914 the Bureau issued a revision of the South American section of the directory (428 pages), and the revision of the sections devoted to Central America and the West Indies is under way.

Branch offices.—The distribution work of the Bureau has been greatly facilitated by the establishment of branch offices in New York, 409 United States Customhouse; Boston, 752 Oliver Building; Chicago, 629 Federal Building; St. Louis, 402 Third National Bank Building; Atlanta, 521 Post Office Building; New Orleans, 1020 Hibernia Bank Building; San Francisco, 310 United States Customhouse; and Seattle, 922 Alaska Building. To these offices are sent the various publications of the Bureau, the reserved information

in connection with foreign trade opportunities, lists of foreign importers and dealers, copies of confidential circulars, manuscript consular reports, documents and exhibits accompanying reports, trade directories, and many other volumes relating to manufacture and commerce. Commercial organizations and individual firms in the respective districts served by these offices are kept informed of the material and information available.

Domestic trade development.—Although the law provides for the promotion and development of trade at home and abroad, work has thus far, in large measure, been devoted to recording and extending the foreign trade of the United States. The work of domestic commercial development is now being taken up actively, and is destined to become an extremely important branch of the service of the office.

The yearly exports of manufactures to foreign countries are now about 5 per cent of the total of 25,000 million dollars' worth produced in the United States annually. The factors of commercial promotion and development related to the domestic production, distribution, and consumption of manufactures which are of legitimate interest to the Bureau are very numerous and worthy of extensive investigation and publicity.

The Bureau has already entered this field with its commercial agents and will extend its researches and add to its publications as rapidly as practicable. Commercial and manufacturers' organizations have been studied, and a report has been published dealing with the promotive activities of 70 representative organizations. Commercial museums and expositions, commercial education, methods of distribution of manufactured products, standards of credit, quality and sources of raw materials, and similar subjects await study from the point of view of the Bureau, as outlined in the law.

Cost of production investigations.—The Bureau is charged with the duty of making investigations, at home and abroad, of the cost of production of articles at the time dutiable in the United States, the profits of manufacturers, the wages and hours of labor in establishments producing such articles, and the comparative cost of living and kind of living. These investigations are undertaken whenever required by the President or by either House of Congress and when industrial changes make it essential.

BUREAU OF LIGHTHOUSES.

The first lighthouse on this continent was built in 1715-16, at the entrance to Boston Harbor, by the Province of Massachusetts, and was supported by light dues on all incoming and outgoing vessels, except coasters. Several other lighthouses were built by the colonies. Congress by the act of August 7, 1789, authorized the maintenance of lighthouses and other aids to navigation at the expense of the United States. There were at that date eight lights in operation, maintained by the colonies. These, together with others completed later, thirteen in all, were ceded to the General Government by the States.

The maintenance of lighthouses, buoys, etc., was placed under the Treasury Department, and up to 1820 was directed personally by the Secretary of the Treasury, except for two intervals, when supervision was assigned by him to the Commissioner of Revenue. In 1820 the superintendence of the lights devolved upon the Fifth Auditor of the Treasury, who was popularly known as the General Superintendent of Lights, and who continued in charge thereof until 1852, when the United States Lighthouse Board, consisting of officers of the Navy and Army, and civilians, was organized, with the Secretary of the Treasury as ex officio president of the Board. The Board selected from its own number a member to act as chairman.

The Lighthouse Service was transferred to the Department of Commerce on July 1, 1903. On July 1, 1910, the Lighthouse Board was terminated, and the present Bureau of Lighthouses established. In this Bureau four officers are appointed by the President—a Commissioner of Lighthouses, a Deputy Commissioner, a Chief Constructing Engineer, and a Superintendent of Naval Construction.

The United States Lighthouse Service is charged with the establishment and maintenance of aids to navigation, and with all equipment and work incident thereto, on the sea and lake coasts of the United States, on the rivers of the United States, and on the coasts of all other territory under the jurisdiction of the United States, with the exception of the Philippine Islands and Panama.

The jurisdiction of the Lighthouse Service over rivers not included in tidewater navigation is restricted to such as are specifically authorized by law; these now include practically all the important navigable rivers and lakes of the country.

All the work of establishing and maintaining the aids to navigation under the jurisdiction of the Lighthouse Service is performed directly by that Service through the district organizations, with the exception of a few minor aids which are maintained by contract, and with the exception of the island of Guam, the American Samoan Islands, and Guantanamo Bay, Cuba, where the aids are maintained through the local authorities. The Lighthouse Service also has supervision over the establishment and maintenance of private aids to navigation and the lighting of bridges over navigable waters of the United States.

There is an office in Washington, which is the executive center of the Service, under the Commissioner of Lighthouses and the Deputy Commissioner. There are in this office an engineering construction division, under the Chief Constructing Engineer; a naval construction division, under the Superintendent of Naval Construction; a hydrographic division, under an assistant engineer, and the general office force, under the chief clerk.

The Service outside of Washington is divided into nineteen lighthouse districts, each of which is under the charge of a lighthouse inspector. In each district there is a central office at a location selected on account of either its maritime importance or its geographical position, and there are also one or more lighthouse depots located conveniently for carrying on the work of the district, in the matter of storing and distributing supplies and apparatus. Each district is provided with one or more lighthouse tenders for the purpose of distributing supplies to the various stations and light vessels and for transportation of materials for construction or repair, for the placing and care of the buoyage system in the district, and for transporting the inspector and other officers of the Service on official inspections of stations and vessels and on other official duty.

In addition to the various district depots, there is in the Third lighthouse district, on Staten Island, New York Harbor, a general lighthouse depot, where many of the supplies for the whole Service are purchased and stored and sent out for distribution, and where much of the special apparatus of the Service is manufactured or repaired, and where also there is carried on various technical work

in the way of testing apparatus and supplies and designing or improving apparatus.

On June 30, 1914, there were 45 regular lighthouse tenders in commission, and the Service maintained light vessels at 52 stations; having for this purpose 66 light vessels, of which 14 were relief vessels, making a total of 111 vessels. The number of employees was 5,562, and the number and classes of aids to navigation maintained by the Service were as follows:

Lighted aids:

Lights (other than minor lights).....	1, 590
Minor lights.....	2, 791
Light-vessel stations.....	52
Gas buoys.....	453
Float lights.....	118
Total.....	<u>5, 004</u>

Unlighted aids:

Fog signals.....	519
Submarine signals.....	48
Whistling buoys, unlighted.....	86
Bell buoys, unlighted.....	233
Other buoys.....	6, 330
Day beacons.....	1, 978
Total.....	<u>9, 194</u>

Grand total.....14, 198

The number of private aids to navigation maintained was 658.

The appropriations made by Congress for the general maintenance of the Lighthouse Service for the fiscal year ending June 30, 1915, amount to \$5,151,630; the appropriations made for special works are \$136,000. The average appropriations for special works for the ten preceding years, 1905 to 1914, inclusive, amounted to \$946,927 per year. The special works include new lighthouses, fog signals, tenders, light vessels, and depots, and extensive improvements or rebuilding of these.

A report of the operations of the Lighthouse Service is submitted annually by the Commissioner of Lighthouses to the Secretary of Commerce and transmitted to Congress. The Service also publishes Weekly Notices to Mariners (jointly with the Coast and Geodetic Survey), Light Lists for the various coasts, and Buoy Lists for each lighthouse district. These publications are distributed free.

BUREAU OF NAVIGATION.

The recognized need of uniform regulation of navigation and shipping was one of the reasons for the formation of a more perfect union of the States, and the third act of the First Congress, passed July 20, 1789, provided for imposing duties on the tonnage of vessels. This was followed on September 1, 1789, by the act for the registering and clearing of vessels and regulating the coasting trade, which is still the foundation of the navigation laws and policy of the United States. Succeeding Congresses have built on this foundation a system of laws designed to meet the growth and variety of conditions of our water-borne commerce, with increasing regard in the course of years to the safety of life.

The field force for the administration of these laws from the beginning of our Government has consisted of collectors and surveyors of customs, with their deputies and inspectors, under the direction of the Secretary of the Treasury, acting at Washington originally through the Register of the Treasury in the matter of documents of vessels and through the Navigation Division of the Customs Service in the administration of other features of the navigation laws. By the act of July 5, 1884, the Bureau of Navigation, with a Commissioner and Deputy Commissioner, was established. This Bureau was transferred to the Department of Commerce July 1, 1903, by the act of February 14, 1903, and to the Secretary of Commerce were transferred all the duties, power, authority, and jurisdiction previously conferred upon the Secretary of the Treasury by acts of Congress relating to merchant vessels or yachts, their measurement, numbers, names, registers, enrollments, licenses, commissions, records, mortgages, bills of sale, transfers, entry, clearance, movements and transportation of their cargoes and passengers, owners, officers, seamen, passengers, fees, inspection, equipment for the better security of life, and by acts of Congress relating to tonnage tax, boilers on steam vessels, the carrying of inflammable, explosive, or dangerous cargo on vessels, the use of petroleum or other similar substances to produce motive power, and relating to the remission or refund of fines, penalties, forfei-

tures, exactions, or charges incurred for violating any provision of law relating to vessels or seamen.

The Bureau of Navigation by law has general supervision of the merchant marine and of merchant seamen except in so far as special lines of work are assigned to the Steamboat-Inspection Service and the Public Health Service.

The Commissioner is specially charged with the decision of all questions relating to the issue of registers, enrollments, and licenses of approximately 26,000 vessels of the United States, ranging from trans-Atlantic liners to motor boats. The Bureau prepares and publishes annually a list of these vessels, showing some details of construction and the home port, and a separate list of seagoing vessels showing signal letters, names of owners, signal code, etc. The changes in the names of these vessels are governed by statute and are made through the Bureau.

Entries of vessels at ports of the United States in foreign trade number annually about 30,000, with a corresponding number of clearances, and disputed questions relating to these movements are decided by the Secretary of Commerce through the Commissioner of Navigation.

Measurement of vessels to ascertain the basis upon which Federal tonnage taxes and various other charges—State, municipal, and private—are assessed is also conducted by customs authorities under the direction of the Bureau.

Tonnage taxes collected annually on entries amount in round numbers to about \$1,000,000, and the decisions of the Commissioner of Navigation on this subject by statute are made final.

Among the special laws enforced through this Bureau are:

(1) Those governing radio communication enacted June 24, 1910, July 23, 1912, and August 13, 1912, which cover wireless telegraph stations both on shipboard and in the United States so far as they affect interstate and foreign commerce. For administrative purposes, the country has been divided into nine districts and inspectors appointed for each district. These laws as well as those covering other items of equipment and the navigation of vessels are intended to safeguard life and property.

(2) The passenger act of 1882, designed to promote the safety and comfort of steerage passengers arriving in and departing from the United States, numbering over a million a year.

(3) The motor-boat act of June 9, 1910, which aims to secure obedience to the principles of navigation involved in the "rules of

the road" and to prevent risk of life through fire or water on small motor craft, already numbering approximately 200,000.

(4) Regulations governing the anchorage of vessels in the harbor of New York and other ports; the transit of vessels through the improved waters of St. Marys River, where the navigation movement is greater than that through the Suez Canal; and for the patrol of crowded waters during regattas and marine parades. Regulations are formulated by the Bureau, under the direction of the Secretary of Commerce, and then enforced by revenue cutters and other patrol boats.

(5) Laws concerning neutrality, so far as they relate to offenses which are involved in the clearance of any vessel fitted out or built for warlike purposes or the transportation of recruits, arms, or munitions of war by water.

(6) The coastwise laws, designed to reserve to American vessels the transportation of cargo and passengers in the domestic commerce of the United States.

Appeals from the rulings of collectors of customs imposing fines, penalties, and forfeitures on vessels and their owners or masters are decided by the Secretary of Commerce after preliminary investigation and preparation of the evidence and facts by the Commissioner of Navigation, involving a knowledge of precedents, construction of statutes, decisions of the courts, and the practical necessities of the shipping interests as they relate to safety to life and property and the promotion of commerce.

The remuneration of collectors, and in many instances surveyors, is based partly on services rendered to vessels, for which specific fees were formerly provided and are still the basis on which such remuneration is paid. The accounts for these services, in so far as they involve navigation matters, have administrative audit by the Bureau, after which they are transmitted to the Auditor for the State and other Departments for settlement.

The Government of the United States, in accord with ancient maritime custom, exercises supervision over the contracts between the owners and masters of vessels and the seamen, in order, so far as possible, to secure substantial justice in case of dispute, without recourse to the courts. For this purpose shipping commissioners are appointed at the principal seaports and at other seaports col-

lectors of customs act as shipping commissioners under the general supervision of the Commissioner of Navigation. The laws thus enforced also cover the shipment and discharge of seamen, all papers relating to the crew, their wages, scale of provisions, etc. At 17 principal seaports upward of 350,000 seamen in round numbers (counting repeated voyages) are thus shipped and discharged under Government supervision.

The laws administered through and by the Bureau of Navigation, which are compiled every four years by the Commissioner of Navigation, whose duty it is to investigate the operation of these laws and to recommend to the Secretary of Commerce particulars in which they should be amended or improved, are published quadrennially in a separate volume entitled "Navigation Laws of the United States," to which a supplement is issued annually upon the adjournment of Congress. The volume includes the laws relating to the registry, enrollment, and license, official numbers, and names of merchant vessels and vessels engaged in the fisheries, undocumented vessels, and yachts; admeasurement laws for ascertaining gross and net tonnage, crew accommodations, and propelling power; detailed statutory requirements concerning the issue of marine documents, bills of sale, mortgages, and records; laws relating to the officers and crews of merchant vessels, including those which govern agreements, shipment and discharge, offenses and punishments, legal scale of provisions, and return and relief of distressed seamen; the laws to determine seaworthiness and inspection, provisions, medicines, and log books, and statutes fixing the liability of owners, masters, and shippers; the passenger act of 1882 with amendments, prescribing measures in detail for the comfort of steerage passengers; the general pilot laws, laws governing motor boats, and provisions concerning tonnage duties, discrimination, and retaliation; statutes governing entry and clearance, manifests, boarding and search of vessels; the laws concerning the coasting trade, and particular statutes affecting trade with Hawaii, Porto Rico, Alaska, the Philippines, and the Canal Zone; the power of the Secretary of Commerce to mitigate and remit penalties incurred by the owners and masters of vessels; the statutory rules to prevent collisions of vessels on the ocean, on inland waters, the Great Lakes, and the Mississippi and tributaries,

and those defining the powers of the Secretary of Commerce over the anchorage and movements of vessels; the regulation of radio communication; the appointment of shipping commissioners and radio inspectors, and various other statutes. The volume comprises about 500 pages and is compiled for the use of collectors and inspectors of customs, shipping commissioners, the owners, masters, and agents of vessels, seamen, and others directly interested in vessels, their officers, crews, passengers, cargo, and navigation.

BUREAU OF STANDARDS.

The Constitution vests the Federal Government with power to "fix the Standard of Weights and Measures," and from the beginning of the Republic many of the foremost statesmen and scientists have worked assiduously to bring our system of weights and measures to a more satisfactory and scientific condition. Washington recognized this as one of the important subjects committed to Congress by the Constitution, and repeatedly urged the necessity for uniform and reliable standards. In 1790 Thomas Jefferson, Secretary of State, was directed by Congress to investigate this subject, and after a most careful consideration submitted a report in which he suggested important reforms, which were not, however, adopted.

A reference to the subject of weights and measures appears in the act approved March 2, 1799 (R. S., 2627), where it was ordered, among other things, that the surveyor of each port of the United States should "from time to time, and particularly on the first Mondays of January and July in each year, [examine and] try the weights, measures, and other instruments used in ascertaining the duties on imports, with standards to be provided by each collector." Apparently this act was not enforced, probably for the reason that no standard had been adopted by Congress or by the Treasury Department. In 1817 President Madison reminded Congress that nothing had been accomplished in reforming and unifying the weights and measures, whereupon the whole subject was referred to John Quincy Adams, then Secretary of State. Mr. Adams, after four years of research, prepared a report which has become a classic in metrology; in it he advised the adoption of a universal standard by international agreement.

By Senate resolution of May 29, 1830, the Secretary of the Treasury was directed to have an examination made of the weights and measures in use at the principal customhouses, and, as was expected, large discrepancies were discovered. As a consequence, the Secretary of the Treasury directed that standards be adopted by the Treasury Department, and that copies be made and distributed to the various customhouses. The avordupois pound was adopted as the standard of weight, and the distance between certain lines on a brass bar in the possession of the Department, and supposed to

conform to the English yard, was taken as the standard of length. In June, 1836, Congress directed further that the Secretary of the Treasury should furnish each State with copies of these standards.

By act approved July 28, 1866, the use of the metric system of weights and measures was legalized, and the Secretary of the Treasury was directed to furnish each State with a set of standard weights and measures of this system.

In 1875, more than half a century after Adams had recommended a conference between nations for the purpose of establishing worldwide uniformity in standards, such a conference was held, and as a result there was established in Paris a permanent International Bureau of Weights and Measures. The bureau thus established undertook the construction of prototypes of the metric standards, and in 1889 these were ready for distribution among the seventeen nations represented at the international conference. Two meter prototypes (standards of length) and two kilogram prototypes (standards of mass) were sent under seal to the United States by special messengers, and were opened at the White House in the presence of the President, the Secretary of State, and a distinguished company of scholars.

The custody of the standards referred to above, and the execution of the provisions made by Congress, remained until July 1, 1901, under the direction of the Superintendent of the Coast and Geodetic Survey, Treasury Department, in his capacity as Superintendent of the Office of Standard Weights and Measures. The facilities of the latter office were exceedingly limited, and the exercise of its functions confined to departments of the General Government and the States.

The act of March 3, 1901, established the National Bureau of Standards, and made it an independent bureau of the Treasury Department, where it remained until, on July 1, 1903, it became a part of the Department of Commerce, under the provisions of the law establishing the Department. The name "Bureau of Standards" was adopted by order of the Secretary on July 1, 1903.

Since 1901 the Bureau has grown as funds were provided to enable it to take up more fully the functions prescribed in its organic act. The relative urgency of the several lines of activity fixed the order and extent of their development. The scope of weights and measures had broadened in recent times to include power, light, heat, electricity, refrigeration, and services of other kinds, which must be measured and for which standards and methods of measurement are

needed. Not less urgent are standards of quality, which rest upon the properties of materials, and which for certain materials are partially defined in "specifications." Units and standards are here needed relating to physical and chemical properties in addition to those of dimension and weight. The Bureau aims to meet this need by the development of standard materials, standard specifications, and standard methods of test for the properties of materials.

Few subjects directly affect more people than weighing and measuring, since practically all products involve measurement, whether grown in the soil or manufactured. Construction, commerce, and daily trade are based upon measurement. Measure and money are the two factors which fix price, and measurement is the basis of science and technology. The Bureau's functions touch closely all who design and make, buy and sell, transport, or utilize materials, energy, or other services which require accurate standards and measuring instruments.

The Bureau has taken up as fully as possible the special functions prescribed by law, which may be summarized as follows:

(1) The custody of the standards, which involves their care and preservation and the varied researches necessary to maintain their constancy.

(2) Comparisons of standards for States, municipalities, institutions, and the general public, including those used in commerce, manufacturing, and science, assuring to the public accuracy at its source—in the factory and the industrial laboratory.

(3) The construction of new standards demanded by scientific and technical progress on the basis of the best available data and new researches at the Bureau, and whenever practicable by international agreement.

(4) Standardization of measuring instruments for manufacturers as a test of their output, or for the user that he may verify instruments or materials independently.

(5) Technical research on problems connected with standards—research which in many cases limits the rate of progress in a given field.

(6) The determination of physical constants and the properties of materials—the exact data relating to materials and energy which underlie technical and industrial work, and for which direct reference to the fundamental standards is highly desirable.

(7) The determination of the properties of materials, such work being based upon the modern view that quality may be measured

and standardized exactly as dimension and weight may be, although the problems may be difficult and require advanced research.

The organization of the Bureau is a practical grouping of the several classes of work—scientific, clerical, and mechanical. The divisions of the scientific work are electricity, weights and measures, heat, light, and chemistry. The technical operations also include engineering instruments and the investigation of materials. The clerical work comprises publication, records, library, accounts, certificates and correspondence, stores, and shipping. The mechanical staff has the operation of the engineering plant, care of buildings and grounds, construction in the instrument shop, cabinet shop, and the shop for glass blowing and glass working. The Bureau aims to attain steady progress in experience and knowledge among the employees in its several lines by a series of graded positions, and by providing facilities and opportunities, such as a technical library, journal meetings, and encouraging evening study to supplement their practical experience. This policy stimulates interest and efficiency.

The work of the Bureau has its main sanction as the legal custodian of the standards and also on account of the fundamental character of the investigations undertaken and the precision attained in such researches. In all of its work the Bureau aims to cooperate fully and directly with all interests concerned, since only in this manner can all points of view and sources of information be regarded.

When international standards are involved, the Bureau cooperates with the standardizing institutions of other countries and with the International Bureau of Weights and Measures. The international agreement as to the precise value of the candlepower as a unit of light is an example. While such fundamental standards are still relatively few, the derived standards, such as standards of light, color, composition, combustion, efficiency, and other quantities which are developed as industrial and scientific needs multiply, steadily increase in complexity.

Sets of the national standards have been supplied to every State of the Union, and these are verified from time to time at the Bureau of Standards. These sets serve to regulate the local measures used by county sealers for inspection of trade weights and measures. In all of such work the Bureau cooperates with State governments and

officials by holding annual conferences, assisting in the technical details of the inspection service, and giving advice concerning new legislation.

The Bureau also cooperates with the national technical societies in developing uniform standard nomenclature, improved specifications, more exact methods of measurement, and more reliable and convenient forms of standards. The manufacture of measuring appliances is now a large group of industries, and in testing the standards used to make measuring appliances the Bureau is indirectly distributing precision in all branches of commerce and trade. To the general manufacturer the Bureau makes available its facilities by standardizing the measures by which he makes his product and upon his request the product itself may be tested. Manufacturers also refer technical problems to the Bureau, and wherever possible the Bureau aims to serve as a clearing house for technical information upon subjects within its field. The large number of inquiries by mail afford another medium for giving information upon these subjects—data which often may be directly applied in commerce, manufacturing, research, and daily trade. The need for a clearing house for such information needs no emphasis.

Length measures in great variety—gauges, bars, rules, tapes, level rods—are standardized under known conditions of temperature and manner of support. Researches are made as to the design and use of such instruments, as well as their change with heat. All length standards used in manufacturing, in engineering—whether measuring lands, laying out buildings or other structures, or making maps and charts—or in scientific work must come directly or indirectly from the Bureau. Likewise the Bureau is the legal custodian of the standards of mass, and all makers of weights and balances and weighing instruments, from the most delicate used by chemists and physicists to the heaviest used in commerce, depend upon the Bureau for their standards.

Each year many thousand glass measures—flasks, pipettes, burettes, cylinders, and other forms used by chemists and others—are tested. Such tests are made by determining accurately the volume of distilled water contained or delivered by the vessel at a certain temperature. Cubic-foot standards are also verified for use in testing gas and water meter provers. Likewise each year hydrometers in large numbers are tested, mainly for use by the Internal-Revenue Service to measure the densities of liquids in

order to assess the proper tax. The Bureau is called upon also to determine densities of solids, liquids, and gases in special cases. These tests of length, mass, and capacity are fundamental, and with time form the basis of more complex measure of energy and the properties of materials. Many of the tests requested require the development of special apparatus and methods.

The importance to science and industry of correct standards and uniformity of measures of length, mass, and capacity is apparent, but it is equally important that standards be provided for the measure of electricity, heat, light, pressure, power, and other quantities. Moreover, the standards here involved are far more complex. Their preparation and comparison involve measurements and research of a high order in practically all branches of physics and chemistry. This work includes standard measuring instruments for temperatures ranging from the lowest to the highest attainable; the establishing of the standard temperature scale, and the determination of standard heating values of combustibles; and testing of pyrometers for measuring the high temperatures used in the steel, glass, pottery, and other industries. The standards and instruments of the electrical industries are no less important or varied in their nature. They involve as fundamental units those of electrical resistance and electromotive force, as well as those of capacity, inductance, and magnetic quantities. The Bureau maintains also a laboratory for preparing and testing standards of illumination used in the manufacture of electric lamps or the testing of gas, oil, and other illuminants. The optical work of the Bureau also requires its special units and standards, for the special optical problems involved, the tests of optical materials and instruments, and the determination of optical constants of industrial and scientific importance.

Standards for manufacturers are not constructed at the Bureau of Standards except in rare cases, although the Bureau has designed standard weights and prepared specifications for the several grades. In general, standards are purchased from the makers of standard measures and sent to the Bureau from time to time for comparison with the Government standards and certification of errors. The degree of precision with which they are compared is planned to meet the exact needs—to avoid at once needless overprecision for the usual cases and also to insure the adequate high precision where that is required for more fundamental or exacting work. The nice

adjustment of the degree of precision to the specific case in hand requires the experience and judgment of the specialist.

The testing of water, gas, and electric meters practically concerns all who utilize such services. These services should, of course, be as accurately measured as are the ordinary articles of trade, and yet proper provision is often wanting for impartial tests of the accuracy of such meters. While the public may suffer loss through faulty meters for which proper testing facilities are inaccessible, yet suspicion may exist without cause, and in such cases it is equally important that the accuracy should be authoritatively attested. Most of this work is for manufacturing or central-station plants or for municipalities.

The work of testing materials is another important branch of the Bureau's functions. Public safety rests upon the certainty that the materials used for buildings, bridges, railroads, and other structures are of sufficient strength and stability. The time has passed when the strength of materials can be taken for granted. With the rapid increase in the height of buildings, length of spans of bridges, and speed of transportation new problems in safety and efficiency arise, which should not be left to guesswork or even personal judgment. Positive tests by assured methods alone can guarantee that, to begin with, the materials are properly selected for the work. By means of strain gauges and other means, the finished structure may be studied under service conditions. Experience is the ultimate test, but until the knowledge of materials is sufficiently complete the best substitute when judgment must be formed in advance is based on the laboratory test. The Bureau cooperates with other agencies in placing the testing of materials upon a scientific basis as fully as possible.

The growing appreciation of the vast waste due to defective materials and their misuse has raised the whole question of efficiency. Adequate testing or measurement is the keynote to the solution of the central problem. The testing of Government supplies is an illustration. In this work the various branches of the Government are cooperating with the Bureau and the purchasing officers in amending the faulty definitions, varying practices, and imperfect specifications, and providing suitable working standards of quality and methods of testing. The development of specifications has been made the subject of special conferences at the Bureau, attended by Government experts, manufacturers, and

users, and the results obtained in the case of electric lamps, Portland cement, paper, and other materials show the value of such work. Among the more important groups of materials tested are metals and metal products, ceramics, cement and concrete, lime, stone, wood, bituminous materials, paint materials, inks, paper, textiles, rubber, leather, adhesives, and a large range of miscellaneous manufactured products.

The Bureau of Standards is located in the northwest section of Washington, D. C., at an elevation of 350 feet above the Potomac River, on a natural hill site of about 16 acres—a location admirably suited to its work, being practically free from mechanical and electrical disturbances. It occupies a group of five buildings, each of which was designed especially for the purpose for which it is used. In addition, it maintains laboratories in Pittsburgh and Northampton, Pa.

Besides an extensive modern equipment of scientific instruments and apparatus for experimental and testing work, the Bureau's facilities are in many respects unique, since the range of work is so varied. In the heat division temperature ranges are available from that of liquid air to the heat of a vacuum electric furnace; in electrical work wide ranges of current are available; in chemical work the usual facilities are supplemented by many special services. For the experimental work electrical power, refrigeration, steam, gas, compressed air, vacuum, liquid air, freezing brine, time service for precision purposes, and many other facilities are available.

The Bureau is provided with a technical library of more than 11,000 volumes, chiefly on physics, chemistry, and technology, and regularly receives about 300 journals relating to subjects in its field of work. The Bureau has issued more than 350 publications giving the results of its scientific work and describing the various lines of testing now going on. These are available for public distribution.

STEAMBOAT-INSPECTION SERVICE.

The act of Congress approved July 7, 1838, which provided for lifeboats, signal lights, fire pumps and hose, and the inspection of the hulls and boilers of steam vessels, was the first legislation on the important question of "the better security of lives of passengers on board of vessels propelled in whole or in part by steam." This act was modified by the acts of March 3, 1843, and March 3, 1849, the latter of which provided for signal lights on all vessels.

The act of Congress approved August 30, 1852, known as the steamboat act, however, was really the establishment of the present Steamboat-Inspection Service, and since that date the work has been prosecuted, with but few innovations, on the plans then adopted. Prior to July 1, 1903, the Secretary of the Treasury was charged with the general supervision of the Service, but on that date this supervision was transferred to the head of what is now the Department of Commerce by act of Congress approved February 14, 1903 (the organic act of the Department).

At the present time the Steamboat-Inspection Service is charged with the duty of inspecting the hulls and machinery of steam vessels and with the administration of the laws requiring passenger vessels to be equipped with boats, rafts, water-tight bulkheads, signal lights, life-saving appliances, and fire-fighting apparatus. It is charged also with the duty of determining the number of passengers a vessel can carry with safety, the number of officers necessary for the safe navigation of vessels, and the licensing of such officers. It prescribes pilot rules to be observed by vessels navigating the waters of the United States, and conducts investigations and trials for violations of the steamboat-inspection laws and the rules and regulations issued in furtherance thereof.

For the purpose of administering the pilot rules the waters of the United States are divided into three parts, and separate rules are made for each. These three divisions are (1) Atlantic and Pacific coast inland waters, (2) the Great Lakes and their connecting and tributary waters as far east as Montreal, and (3) rivers whose waters flow into the Gulf of Mexico, and their tributaries, and the Red River of the North.

The jurisdiction of the Service extends to all steam vessels navigating any waters of the United States which are common highways of commerce or open to general or competitive navigation, except vessels owned by the United States or other governments and boats propelled in whole or in part by steam for navigating canals. It has jurisdiction also over coastwise seagoing vessels and vessels navigating the Great Lakes, when navigating within the jurisdiction of the United States, as well as over all foreign private steam vessels carrying passengers from any port of the United States to any other place and country.

At the head of the Service is the Supervising Inspector General, with offices located in Washington, whose duty it is, under the direction of the Secretary of Commerce, to superintend the administration of the steamboat-inspection laws; preside at the meetings of the Board of Supervising Inspectors; receive all reports and accounts of inspectors; examine, on application of the officer whose license is in question, any case involving the revocation or suspension of license; report fully at stated periods to the Secretary of Commerce on all matters pertaining to his official duties, and produce a correct and uniform administration of the inspection laws, rules, and regulations. The Supervising Inspector General is responsible for the general effectiveness, usefulness, and capacity of the Service, and for the intelligent direction and management of its affairs.

The United States and all its territorial possessions, with the exception of the Philippine Islands, is divided into 10 supervising inspection districts, each of which is presided over by a supervising inspector of steam vessels, and these districts, in turn, are divided into local districts in charge of boards of local inspectors, consisting of a local inspector of hulls and a local inspector of boilers. Whenever necessary, assistant inspectors of hulls and boilers are appointed to assist the local inspectors in the inspection of vessels. There is also one traveling inspector. To each board at least one clerk is assigned to perform necessary clerical work.

The supervising inspectors, in charge of the various supervising inspection districts, are selected for their knowledge and practical experience in the uses of steam for navigation and are responsible for the general condition and efficiency of the Service throughout their respective districts. It is their duty to watch over all parts of the territory assigned to them; instruct local boards of inspectors in the proper performance of their duties; examine, whenever

they think it expedient, into the condition of any licensed vessel for the purpose of ascertaining whether the laws have been observed both by the inspectors and the masters and owners; and report to the Secretary any failure of a board to do its duty. They are also obliged to visit any district in which there is at any time no board of inspectors and within which steam vessels are owned and employed, and to perform in such district all the duties imposed on local boards. They hear and decide all cases in which any person, master, or owner deems himself wronged by the decision of the local inspectors, and investigate and decide all cases, when requested to do so, where disagreements have arisen between the local inspectors. At the end of each year they submit reports to the Supervising Inspector General covering the general business transacted during the year, together with all violations of laws and the action taken in relation thereto.

On the third Wednesday of January, in each year, and at such other times as the Secretary of Commerce may prescribe, the supervising inspectors and the Supervising Inspector General assemble at Washington as a Board of Supervising Inspectors for the purpose of joint consultation, the assignment of territory, the approval of instruments and equipment required to be used on steam vessel for the better security of life, and the formulation of regulations necessary to carry out in the most effective manner the provisions of the steamboat-inspection laws, which regulations, when approved by the Secretary of Commerce, have the force of law. The Secretary, however, is authorized to call in session, at any time, after reasonable public notice, a meeting of an executive committee, composed of the Supervising Inspector General and two supervising inspectors, which committee, with the approval of the Secretary, may change or repeal any of the rules or regulations made by the Board of Supervising Inspectors, such changes to have the force of law and continue in effect until 30 days after the adjournment of the next meeting of the Board of Supervising Inspectors. The executive committee may also approve instruments, machines, and equipment required to be used on steam vessels for the better security of life.

Each of the local districts into which the various supervising inspection districts are divided is presided over by a board of local inspectors, consisting of a local inspector of hulls and a local inspector of boilers. It is the duty of this board to inspect, at least once a

year, each steam vessel within its district, and to certificate or disapprove the same, and to examine all steamers arriving and departing to and from the ports in its district, and order the master or owner to make necessary repairs or correct unlawful conditions. It is also incumbent on the board to examine all persons applying for officers' licenses, to license for five years each of them who can be safely intrusted with the duties and responsibilities of the station for which application is made, to investigate all acts of incompetency or misconduct committed by licensed officers while acting under the authority of their licenses, and when necessary to suspend or revoke the licenses of such officers. It is required to keep a record of all licenses granted to masters, mates, pilots, and engineers, as well as its decisions in cases where licenses have been refused, suspended, or revoked, and to transmit to the supervising inspector of its district all testimony received by it in such proceedings. It is also required to keep a record of certificates issued to vessels and of every steamer boarded during the year, which information, together with an account of all other official acts, is communicated to the supervising inspector in the form of a report at such times as may be directed.

Assistant inspectors perform such duties of actual inspection as may be assigned to them under the direction, supervision, and control of the local inspectors, and may be detailed by the Supervising Inspector General, under the direction of the Secretary of Commerce, to inspect, at the mills where the same are manufactured, iron and steel plates to be used in the construction of marine boilers, which plates, when properly stamped, are accepted by local inspectors as being in full compliance with the law.

Whenever any local inspector or supervising inspector ascertains that any vessel subject to the provisions of the steamboat-inspection laws is being operated or navigated without complying with the provisions of such laws, the certificate of inspection issued to such vessel is immediately revoked, and no new certificate is issued until the law has been fully complied with. Any vessel operating or navigating, or attempting to operate or navigate, after the revocation of her certificate of inspection and before the issuance of a new certificate is subject to a fine, and may by proper order or action of any district court of the United States having jurisdiction be seized summarily by way of libel and held without privilege of release by bail or bond until a proper certificate of inspection shall have been

issued to said vessel. Any master or owner of any vessel whose certificate shall have been revoked may, however, appeal to the Secretary of Commerce for a reexamination of the case, and upon such appeal the Secretary has power to revise or set aside the action of the local or supervising inspector and to direct the issuance of a certificate of inspection. The judicial process brought against the vessel shall thereupon be of no further force or effect, and the vessel shall be released.

The duties of the traveling inspector, performed under the direction of the Supervising Inspector General, are to travel from place to place and make special examinations of vessels subject to inspection, for the purpose of keeping the Supervising Inspector General informed as to the actual conditions in the districts as he observed them, with a view to obtaining uniform administration of the law, and the standardizing of equipment and of licensing of officers.

In addition to the annual report of the Supervising Inspector General and the list of officers licensed each year, the Service issues and distributes frequent editions of pilot rules for each of the three divisions into which the waters of the United States are divided, laws governing the Service, and general rules and regulations prescribed by the Board of Supervising Inspectors.



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